المراجعة رقم (1)














Exercises: lesson (1)



Choose the correct answer :

1. In what states can water exist?
   a) Only in the solid stat
   b) Only in the gaseous state
   c) In all three states: solid, liquid, and gaseous
   d) Only in the liquid state
2. At what temperatures can water exist in all three states?
   a) Temperatures below zero only
   b) Temperatures commonly known on Earth's surface
   c) Only at high temperatures
   d) Only at low temperatures
3. In what states can water be found?
   a) Only solid
   b) Only liquid
   c) Only solid and liquid
   d) Solid, liquid, and gaseous
4. What is the state in which water cannot be found on Earth's surface?
   a) Gaseous
   b) Solid
   c) Plasma
   d) Liquid
5. Why is water considered a good solvent?
   a) Because it reacts with all substances
   b) Because it dissolves many chemicals
   c) Because it absorbs all solar radiation
   d) Because it does not react with air
6. Which of the following properties does not apply to water?
   a) It can freeze
   b) It can evaporate
   c) It can dissolve rocks
   d) It can remain in a liquid state
7. What makes water capable of supporting life?
   a) Its non-reactivity with chemicals
   b) Its ability to dissolve many chemicals
   c) Its absence in the gaseous state
   d) Its absence in the liquid state






8. What is the importance of the membrane surrounding cells?
   a) It prevents water from entering the cell
   b) It helps in the passage of water and essential materials
   c) It maintains cell temperature
   d) It stops the flow of nutrients
9. In what state can water be at room temperature?
   a) Solid b) Liquid c) Gaseous d) Plasma
10. What distinguishes water from other liquids?
   a) It evaporates at very low temperatures
   b) It dissolves many chemicals
   c) It does not turn into a solid state
   d) It does not react to heat
11. In what state can water be found in high mountains?
   a) Only solid b) Only gaseous c) Only liquid d) Solid and liquid
12. How does water interact with the cell membrane?
   a) Passes through it to transport materials
   b) Dissolves the membrane
   c) Increases the thickness of the membrane
   d) Prevents the transfer of materials
13. How does water help in removing waste in living organisms?
   a) Through chemical breakdown
   b) By passing through the cell membrane
   c) Through evaporation
   d) By dissolving waste
14. What is the state of water at temperatures below zero?
   a) Solid b) Liquid c) Gaseous d) Plasma
15. What materials does water carry into the cell?
   a) Waste
   b) Materials necessary for energy production
   c) Fats
   d) Proteins
16. Which of these substances is not a good solute in water?
   a) Oil b) Sugar c) Salt d) Gases
17. How does water exist on Earth's surface in different states?
   a) Based on atmospheric pressure
   b) Based on temperature
   c) Based on winds
   d) Based on oxygen levels
18. Which of the following properties is not related to supporting life?
   a) Water's ability to dissolve chemicals
   b) Water's ability to evaporate
   c) Water's ability to turn into ice
   d) Water's ability to reduce atmospheric pressure








19. In which states can water be found in deserts?
    a) Solid b) Liquid c) Gaseous d) Solid and liquid
20. What distinguishes Earth from other planets in the solar system?
    a) The atmosphere b) The water layer
    c) The ice layer d) The biosphere
21. What percentage of Earth's surface is covered by water?
    a) 60% b) 70% c) 80% d) 90%
22. Where is saline water primarily found?
    a) In rivers
    b) In freshwater lakes
    c) In oceans and seas
    d) In the atmosphere
23. Where can freshwater be found?
    a) In freshwater lakes and groundwater b) In seas and oceans
    c) In the atmosphere d) In polar regions only
24. What is the main component of the atmosphere related to water?
    a) Frozen water
    b) Freshwater
    c) Water vapor
    d) Saline water
25. What does the ice layer refer to?
    a) Saline water in seas
    b) Freshwater in rivers
    c) Frozen water in polar regions and mountains
    d) The water layer
26. What percentage of Earth's water is freshwater?
    a) 1% b) 3% c) 5% d) 10%
27. Which of the following represents water vapor?
    a) Liquid state
    b) Solid state
    c) Gaseous state
    d) Plasma state
28. What is the approximate percentage of freshwater in rivers and lakes?
    a) 30% b) 50%
    c) 1% d) 10%
29. Which of the following is part of the ice layer?
    a) River water b) Saline lake water
    c) Glaciers d) Ocean water

30. What is the percentage of available freshwater for human use?
    a) 1% b) 10% c) 3% d) 5%
31. What determines the state of water on Earth's surface?
    a) Temperature and pressure
    b) Atmospheric pressure
    c) Chemical composition
    d) Earth's gravity
32. What is the role of water in the environment?
    a) Cooling b) Heat generation c) Chemical reaction d) Dissolution
33. What is the main reason water is essential for life on Earth?
    a) Its abundance
    b) Its ability to dissolve substances
    c) Its solid state
    d) Its non-reactivity










Exercises: lesson (2)

Choose the correct answer :

1. What is the percentage of oxygen by mass in a water molecule?
   a) 11.11% b) 50% c) 88.89% d) 75%
2. What percentage does hydrogen represent by mass in a water molecule?
   a) 11.11% b) 88.89% c) 50% d) 25%
3. How many covalent bonds exist between the hydrogen atoms and the oxygen atom in water?
   a) One b) Two c) Three d) Four
4. What is the measure of the angle formed between the covalent bonds in a water molecule?
   a) 90° b) 104.5° c) 120° d) 180°
5. What type of bonds are present between hydrogen and oxygen in water?
   a) Ionic
   b) Metallic
   c) Covalent
   d) Van der Waals
6. Which element is most abundant by mass in water?
   a) Hydrogen
   b) Oxygen
   c) Nitrogen
   d) Carbon
7. If the molecular mass of water is 18 g/mol, what is the mass of oxygen in one mole of water?
   a) 8 g b) 12 g c) 16 g d) 18 g
8. What is the most common physical state of water under natural conditions?
   a) Solid b) Liquid
   c) Gas d) Plasma
9. What happens to the bond angle in water when it is heated?
   a) Increases
   b) Decreases
   c) Stays the same
   d) Becomes 180°








10. What type of bond forms between molecules in liquid water?
    a) Covalent bond
    b) Hydrogen bond
    c) Ionic bond
    d) Metallic bond
11. What is the primary factor that makes water a good solvent?
    a) Hydrogen bonds
    b) Covalent bonds
    c) Polarity
    d) Molecular mass
12. How many electrons does oxygen contribute in covalent bonds with hydrogen?
    a) One b) Two c) Three d) Four
13. In which of the following states does the density of water increase?
    a) When it turns to ice
    b) When it evaporates
    c) When it is in liquid state
    d) When it freezes
14. What is the relative volume of hydrogen atoms compared to the oxygen atom in a water molecule?
    a) 1:1
    b) 2:1
    c) 1:2
    d) 3:1
15. At what temperature does water freeze?
    a) 0°C
    b) 100°C
    c) 50°C
    d) -10°C
16. What is the boiling point of water at normal atmospheric pressure?
    a) 0°C
    b) 100°C
    c) 50°C
    d) -10°C
17. How does atmospheric pressure affect the boiling point of water?
    a) Increases boiling point
    b) Decreases boiling point
    c) Has no effect
    d) Causes water to freeze








18. What is the most stable phase of water at room temperature?
    a) Solid b) Liquid
    c) Gas d) Plasma
19. What effect occurs on the density of water when its temperature rises above 4°C?
    a) Density increases
    b) Density decreases
    c) Density remains constant
    d) Turns into ice
20. Which of the following properties does not apply to water?
    a) Dissolves polar compounds
    b) Has a higher density in solid form
    c) Has a high specific heat
    d) Can form hydrogen bonds
21. What is the percentage of hydrogen in water by mass?
    a) 11.11% b) 50% c) 75% d) 88.89%
22. Which of the following is true about a water molecule?
    a) Polar molecule
    b) Non-polar molecule
    c) Ionic molecule
    d) Metallic molecule
23. Why does water have a high heat of vaporization?
    a) Due to hydrogen bonds
    b) Due to covalent bonds
    c) Due to its low density
    d) Due to its high mass
24. How does an increase in temperature affect hydrogen bonds in water?
    a) Increases bonds b) Decreases bonds
    c) No effect d) Turns into covalent bonds
25. What factor makes water a good solvent for salts?
    a) Polarity b) Density
    c) Temperature d) Mass
26. What is the reason for water's reaction with various chemicals?
    a) Due to its high purity.
    b) Due to impurities.
    c) Due to its high temperature.
    d) Due to its ability to form hydrogen bonds.

27. Due to the high electronegativity of oxygen, electrons are drawn towards...
    a) Hydrogen atom
    b) Oxygen atom
    c) Nucleus
    d) Space between atoms
28. What type of partial charge forms on the hydrogen atom in a water molecule?
    a) Partial negative
    b) Partial positive
    c) Neutral
    d) None
29. What is the term for the effect of partial charges on a water molecule?
    a) Polarity
    b) Cohesion
    c) Viscosity
    d) Sublimation
30. Due to polarity, water molecules can interact with...
    a) Non-polar molecules
    b) Other polar molecules
    c) Gases
    d) Neutrons
31. When salts dissolve in water, they break down into...
    a) Molecules
    b) Nuclei
    c) Hydrated ions
    d) Protons
32. Water is considered a universal solvent because...
    a) Of its high viscosity
    b) Of its small size
    c) Of its high polarity
    d) Of its atomic mass








Exercises: lesson (3)

Choose the correct answer :

1. How do large gills and capillaries help deep-sea fish?
   a) Increase the amount of oxygen extracted from water
   b) Reduce the need for oxygen
   c) Improve movement ability
   d) Raise pressure in the body
2. What is an example of a fish that lives in the depths of the ocean and adapts to low oxygen levels?
   a) Shark
   b) Electric eel
   c) Salmon
   d) Tuna
3. How does osmosis affect the movement of water between solutions?
   a) Water moves from a concentrated solution to a diluted one
   b) Water moves from a diluted solution to a concentrated one
   c) Water moves evenly between the solutions
   d) Osmosis does not affect water movement
4. How can fish living in low-oxygen environments reduce their oxygen needs?
   a) Increase metabolic rate
   b) Decrease metabolic rate
   c) Increase food consumption
   d) Reduce gill size
5. What is the semipermeable membrane in the process of osmosis?
   a) Allows all substances to pass
   b) Allows only water to pass
   c) Allows only the concentrated solution to pass
   d) Prevents any substance from passing
6. How does osmotic pressure affect water movement?
   a) Increases the flow of water to the less concentrated solution
   b) Increases the flow of water to the more concentrated solution
   c) Prevents water movement
   d) Makes water move in equal directions

7. How do strong blood vessels help deep-sea fish?
   a) Improve their breathing ability
   b) Help them adapt to high pressure
   c) Increase oxygen consumption
   d) Decrease carbon dioxide levels
8. What is the osmotic pressure of freshwater compared to the bodies of living organisms?
   a) Higher b) Lower c) Equal d) Irrelevant
9. What happens to the bodies of living organisms in freshwater due to decreased osmotic pressure?
   a) They shrink
   b) They burst
   c) They remain stable
   d) They freeze
10. What organ do unicellular organisms have to adapt to freshwater?
    a) Kidneys
    b) Contractile vacuole
    c) Gills
    d) Lungs
11. How does the contractile vacuole work in unicellular organisms?
    a) Collects excess water and pushes it out of the cell
    b) Absorbs food
    c) Stores energy
    d) Conducts respiration
12. How do fish eliminate excess water from their bodies?
    a) Through the skin only
    b) Through kidneys, mouth, and gills
    c) Through breathing
    d) Through contractile vacuoles
13. How do fish that live in saline environments adapt to high salinity levels?
    a) Absorb water through their skin
    b) Ingest large amounts of water and excrete excess salts
    c) Do nothing
    d) Avoid saline water

14. What is the source of water that saltwater fish need to compensate for water loss?
    a) Freshwater
    b) Highly saline seawater
    c) Rainwater
    d) Distilled water
15. How do sharks maintain water and salt balance in their bodies?
    a) By consuming large amounts of food
    b) By controlling the urea levels in their blood
    c) By continuous urination
    d) By absorbing water through their skin
16. What is the effect of urea concentration in shark blood on osmotic pressure?
    a) Decreases osmotic pressure
    b) Increases osmotic pressure
    c) No effect
    d) Causes cell bursting
17. What is the role of gills in saltwater fish?
    a) No role
    b) Helps absorb water
    c) Excretes excess salts
    d) Only contributes to respiration
18. How do multicellular organisms adapt to freshwater?
    a) By reducing their size
    b) By developing kidneys to eliminate excess water
    c) By using contractile vacuoles
    d) By increasing food intake
19. What are behavioral adaptations?
    a) Behaviors or actions taken by living organisms to avoid harsh conditions
    b) Changes in the genetic structure of organisms
    c) Changes in the surrounding environment
    d) Photosynthesis processes
20. What is the reason for some fish migrating between freshwater and saltwater?
    a) Only to search for food
    b) For reproduction and survival
    c) To avoid predators
    d) For seasonal migration








21. Where is salmon born?
    a) In the sea
    b) In saltwater
    c) In freshwater
    d) In glacial rivers
22. When do young salmon undergo osmotic adaptation?
    a) When they reach sexual maturity
    b) At birth
    c) When they reach a certain size
    d) Before hatching
23. How does the salmon cycle adapt to different environments?
    a) By increasing heart rate
    b) By changing skin color
    c) By adapting to changes in salinity and oxygen levels
    d) By reducing body size
24. What is the first stage of young salmon life?
    a) Living in the sea
    b) Living in freshwater
    c) Spawning
    d) Transitioning to the ocean
25. How does salinity affect salmon's ability to live in different environments?
    a) Affects only metabolic rate
    b) Requires complex physiological adaptations
    c) Has no effect
    d) Makes salmon more susceptible to diseases
26. What are structural adaptations?
    a) Changes in behavior
    b) Changes in the physical structure of living organisms
    c) Changes in diet
    d) Changes in social behavior
27. How do large eyes help fish living in the depths of the oceans?
    a) Swim faster
    b) See in the dark
    c) Breathe underwater
    d) Reduce water resistance

28. What is the function of gills in fish?
    a) Assist in movement
    b) Used for buoyancy
    c) Enable extraction of dissolved oxygen from water
    d) Assist in excretion
29. How does a body covered in scales and mucus help fish?
    a) Increases body size
    b) Reduces water resistance when swimming
    c) Makes them less attractive to predators
    d) Improves their photosynthetic ability
30. What is gas exchange?
    a) The process of food production
    b) The acquisition of oxygen and the removal of carbon dioxide by an organism
    c) The process of protein formation
    d) The process of storage in the body
31. What is the primary molecule broken down in cellular respiration to obtain energy?
    a) Fats
    b) Proteins
    c) Glucose
    d) Nucleic acids
32. Which of the following adaptations allows deep-sea fish to coexist with low oxygen levels?
    a) Slowing metabolic rate
    b) Compressed body
    c) Increased salt concentration in cells
    d) Strong blood vessels
33. Which of the following is a similarity between amoebas and fish?
    a) Cellular respiration
    b) Gas exchange organ
    c) Body complexity
    d) Osmotic regulation methods
34. Which of the following helps reduce water resistance for fish movement in water?
    a) Scales only
    b) Mucus only
    c) Mucus and streamlined body
    d) Streamlined body, mucus, and scales








Exercises: lesson (4)

Choose the correct answer :

1. How does temperature affect marine organisms?
   A) It only changes their color
   B) It affects their activity and vital processes
   C) It does not affect them
   D) It only makes them grow faster
2. Why is the water in lakes and rivers cooler than the air on a hot summer day?
   A) Because water absorbs heat quickly
   B) Because air moves faster
   C) Because water needs more heat to raise its temperature
   D) Because water contains salt
3. What is heat?
   A) A measure of how hot a body is
   B) Energy transferred due to temperature differences
   C) The amount of water in the system
   D) A type of electrical energy
4. What is temperature?
   A) The amount of heat in the system
   B) A quantitative description of the hotness or coldness of a body
   C) The mass of a body
   D) The volume of a body
5. How does thermal energy affect molecular movement?
   A) It decreases their movement
   B) It increases their vibration and kinetic energy
   C) It makes them stop
   D) It makes them merge together
6. When an object gains a quantity of thermal energy, what happens to its temperature?
   A) It decreases
   B) It remains constant
   C) It increases
   D) It freezes

7. What is the relationship between an increase of 1°C and 1K in temperature?
   A) They are equal
   B) 1°C is less than 1K
   C) 1°C is more than 1K
   D) They are unrelated
8. What happens to the molecules of a substance when its temperature rises?
   A) The distances between them increase
   B) Their speed and vibrations increase
   C) They freeze
   D) They dissolve
9. What is one factor that affects heat exchange in the marine environment?
   A) Wave movement
   B) The presence of fish
   C) Pollution

D) Water quality

10. What is a potential consequence of rising ocean temperatures?

A) Increased marine life
B) Deterioration of ecosystems
C) Decreased salinity levels
D) Improved water quality

11. How do heat properties help determine marine climate?

A) They only control rainfall amounts
B) They affect water temperatures and marine organism movement
C) They only determine fish species
D) They do not affect climate

12. How do temperature changes affect the biological activity of marine organisms?

A) They only increase activity
B) They determine breeding and growth times
C) They do not affect activity
D) They make organisms more passive

13. Why is heat important for marine ecosystems?

A) Because it only affects large organisms

B) Because it affects all aspects of marine life

C) Because it only affects fish

D) Because it limits wave movement








14. How do thermal changes affect marine migration?
A) They increase migration
B) They limit migration
C) They do not affect migration
D) They make migration easier
15. What is the reason for the high specific heat of water?
A) The presence of salt
B) Hydrogen bonds between its molecules
C) The size of the molecules
D) Atmospheric pressure
16. How does the high specific heat of water contribute to climate moderation?
A) By only storing heat
B) By regulating land temperatures
C) By reducing humidity levels
D) By preventing rainfall
17. What happens to the air above land when it heats up?
A) It becomes denser
B) It rises due to decreased density
C) It decreases
D) It becomes cold
18. What is a "sea breeze"?
A) Cold winds from land to sea
B) Movement of cold air from over the water towards the land
C) Strong storms over the oceans
D) Heating of the air above land
19. How does the sea breeze affect local climate?
A) It raises air temperature
B) It cools coastal areas
C) It does not affect climate
D) It increases humidity
20. What factors lead to cold air movement towards land?
A) Increased humidity
B) Temperature differences between land and water
C) Air pollution
D) Decreased atmospheric pressure








21. What is the main effect of water's high specific heat on ecosystems?
A) Improving water quality
B) Supporting biodiversity
C) Maintaining temperature balance
D) Increasing water pollution

22. How does the high specific heat of water contribute to marine life?
A) It provides a consistently warm environment
B) It prevents sudden temperature changes
C) It increases the growth rate of organisms
D) It makes water denser

23. How do temperature changes in the oceans affect marine organisms?
A) They change their shape
B) They affect their distribution
C) They do not affect them
D) They increase their size

24. What is the environment like for marine organisms that may not withstand temperature changes?
A) Only saline water
B) Warm surface water and cold depths
C) Only fresh water
D) All types of water

25. What is a potential impact of climate change on coral reefs?
A) Promoting their growth
B) Not affecting them
C) Causing their death due to temperature changes
D) Only changing their color

26. How does the high specific heat of water help maintain stable temperatures?
A) By increasing evaporation rates
B) By absorbing solar energy and releasing it slowly
C) By reducing water depth
D) By increasing water movement

27. How do temperature changes affect the stability of the marine environment?
A) They increase water pollution
B) They cause fluctuations in environmental conditions
C) They improve water quality
D) They make water deeper








28. Which marine organisms are most affected by temperature changes?
A) Warm-blooded organisms
B) Cold-blooded organisms
C) All marine organisms
D) Terrestrial organisms

29. What is the direct effect of rising temperatures on surface waters?
A) Increased density
B) Decreased oxygen levels
C) Increased salinity levels
D) Increased water volume

30. What happens to water when it absorbs solar energy during the day?
A) It cools rapidly
B) It releases energy slowly at night
C) It completely evaporates
D) It freezes








Exercises: lesson (6-5)



Choose the correct answer :

1) Which of the following is considered a fluid?

A- Gas B- Solid C- Liquid D- Both (a) and (c)

2) The pressure exerted on a fluid at some point is…... to density &.... to depth.

A- Direct-direct B- Inverse – inverse

C- Direct-inverse D- Inverse direct

3) The pressure in ocean at a point is 12 atm, then at a 40 meter distance below this point, it will be……………..

A-12 atm B-8 atm C- 4 atm d- Zero atm

4) The Pascal unit of pressure is equivalent to……………

a- Atmosphere b- N/m^2 c- Bar d-Torr

5) 15 bar equals to……………. Pascals.

a- 10^5 b- 100 c- 1.5×10^5 d- 1000

6) A force of 50 N acts uniformly over and at right angles to a surface. When the area of the surface is 5 m^2, the pressure on the area is…………

a- 250 Pa b- 45 Pa c- 10 Pa d- 55 Pa

7) Which of the following is true about tilapia and mullet?
a) They are cartilaginous fish
b) They are more flexible than sharks
c) They are classified as Chondrichthyes
d) Their skeleton composed of bones

8) ……………..is responsible for enhancing the flexibility of the cell membranes in marine creatures.

a- Polysaccharide b- Lipoproteins

c- Nucleic acids d- None of the above

9. What is the vital role of light and solar radiation in the oceans?
   A) Improving water quality
   B) Supporting photosynthesis and maintaining ecological balance
   C) Increasing salinity
   D) Enhancing water movement
10. What is the primary source of energy in marine processes?
   A) Air
   B) Solar radiation
   C) Living organisms
   D) Marine minerals
11. What colors make up the visible spectrum?
   A) Red, green, and blue only
   B) White and black only
   C) Red, orange, yellow, green, blue, indigo, violet
   D) Yellow and pink only
12. What is direct solar radiation?
   A) Radiation that spreads before reaching
   B) Radiation that reaches the Earth's surface without scattering
   C) Reflected radiation
   D) Radiation that is scattered in the atmosphere
13. What factors affect the amount of solar radiation reaching the Earth's surface?
   A) Time of day only
   B) Geographic location, season, time of day, cloud cover, elevation
   C) Amount of clouds only
   D) Color of the ground
14. How does solar radiation affect water?
   A) Water absorbs it only
   B) Changes the color of water
   C) Affects the different layers of water
   D) Does not affect water
15. What happens when sunlight hits the surface of the water at a right angle?
   A) All rays are reflected
   B) A larger amount of light penetrates
   C) The amount of light is unaffected
   D) Less penetrates than usual

16. What is the effect of the angle at which sunlight strikes the surface of the water?
    A) No effect
    B) Determines the amount of light that penetrates the surface
    C) Increases water speed
    D) Causes water evaporation
17. What is the percentage of visible light that reaches a depth of 100 meters in clear tropical waters?
    A) 10%
    B) 50%
    C) 1%
    D) 25%
18. How does water depth affect the absorption of light colors?
    A) No effect
    B) Absorbs all colors equally
    C) Absorbs warm colors more than cold colors
    D) Scatters all colors
19. Which colors are absorbed more in water?
    A) Blue
    B) Green
    C) Red and orange
    D) Yellow
20. What is the effect of depth on light intensity in water?
    A) Light intensity increases
    B) Remains constant
    C) Light intensity gradually decreases
    D) Not affected
21. What happens when cooler light colors are scattered in water?
    A) Rain falls
    B) They are completely absorbed
    C) Reflected off the surface
    D) Remain in the depths
22. What colors are considered warm?
    A) Blue and indigo
    B) Red and orange
    C) Green and yellow
    D) Purple and gray

23. How does light gradient determine different areas in the oceans?
    A) Based on marine organisms only
    B) Based on the amount of available light
    C) Based on water temperature
    D) Based on water salinity
24. What is the effect of light on aquatic plants?
    A) Increases their activity
    B) Reduces their growth
    C) Does not affect them
    D) Causes wilting
25. Why are infrared rays important in water absorption?
    A) Because they heat the water
    B) Because they do not affect water
    C) Because they scatter light
    D) Because they increase oxygen levels in water
26. In which layers of water bodies does photosynthesis primarily occur?
    A) Deep layers
    B) Surface layers
    C) Middle layers
    D) Cold layers
27. How does solar radiation affect ecological balance?
    A) Only affects temperatures
    B) Affects photosynthesis and water temperatures
    C) Does not affect the environment
    D) Affects only marine organisms
28. What are the direct effects of solar radiation on water temperatures?
    A) No effect
    B) Increases water temperature
    C) Decreases water temperature
    D) Makes water uninhabitable
29. What species live in warm waters resulting from solar radiation?
    A) Cold-water fish like cod
    B) Tropical fish like tuna and barracuda
    C) Deep-sea fish
    D) Floating fish

30. What happens in polar regions during winter periods?
    A) Photosynthesis increases
    B) Photosynthesis decreases significantly
    C) Marine organism numbers increase
    D) Water becomes warmer
31. What is an example of an ocean current affected by solar radiation?
    A) Pacific Current
    B) Gulf Stream
    C) Cold Current
    D) River Current
32. How does solar radiation affect organisms that rely on photosynthesis?
    A) It provides food for them
    B) It reduces their growth
    C) It has no effect on them
    D) It makes them more sensitive
33. How does solar radiation affect diverse marine organisms?
    A) It increases their numbers
    B) It has no effect on them
    C) It affects their distribution based on their light needs
    D) It makes them compete for food
34. What is the overall effect of high temperatures on marine organisms?
    A) It makes them healthier
    B) It leads to the death of some species
    C) It has no effect on them
    D) It increases their reproduction
35. Which marine organisms rely on symbiotic algae?
    A) Only large fish
    B) Coral reefs
    C) Predators
    D) Plankton
36. How does solar radiation affect the distribution of marine organisms in aquatic environments?
    A) It only promotes their reproduction
    B) It leads to their freezing
    C) It determines their locations based on their light needs
    D) It makes them move randomly








37. Why is photosynthesis essential for marine life?
    A) Because it only produces oxygen
    B) Because it provides energy for living organisms
    C) Because it prevents pollution
    D) Because it increases water salinity
38. What is the environment that organisms face in the depths of the oceans?
    A) A harsh environment under immense water pressure
    B) A warm and humid environment
    C) A dry and closed environment
    D) A sunlight environment
39. What is the concept of fluids?
    A) Only solids
    B) Flowing materials like liquids and gases
    C) Only gases
    D) Non-flowing materials
40. Why do liquids resist compression?
    A) Because they are less dense
    B) Because they maintain their volume almost constant
    C) Because they have high elasticity
    D) Because they consist of large molecules
41. How is pressure calculated at a point within a liquid?
    A) Using the relation $F = P \times A$
    B) Using the relation $P = \rho g$
    C) Using the relation $P = m/V$
    D) Using the relation $F = ma$
42. What is the unit of pressure measurement?
    A) Newton
    B) Pascal
    C) Meter
    D) Kilogram
43. How does depth affect the value of pressure in a liquid?
    A) Pressure increases with increasing depth
    B) Pressure decreases with increasing depth
    C) Pressure remains constant
    D) Pressure decreases
44. What is the factor that affects liquid pressure at a specific point?
    A) Density only B) Depth and density
    C) Temperature only D) Volume only

45. What is the relationship that expresses liquid pressure at a depth h?
    A) $P = \rho g$
    B) $P = \rho gh$
    C) $P = gh$
    D) $P = g/\rho$
46. What is the reference level used to measure altitudes on Earth?
    A) Cloud level
    B) Sea level
    C) Mountain level
    D) Water level in rivers
47. What is the property of communicating vessels?
    A) The liquid rises to the same level in connected vessels
    B) No pressure in the liquid
    C) Variation in liquid levels
    D) Pressure changes based on shape
48. How can living organisms adapt to high pressure in the depths of the oceans?
    A) By increasing their density
    B) By developing special structures
    C) By changing their shape
    D) By migrating to the surface
49. What is the largest unit of pressure used practically?
    A) Megapascal
    B) Bar
    C) Newton
    D) Kilogram
50. What are the factors that affect the value of pressure at a point in a liquid?
    A) Volume only
    B) Liquid density and depth
    C) Temperature only
    D) Number of molecules only
51. How is pressure measured in liquids?
    A) Using pressure gauges
    B) Using thermometers
    C) Using depth gauges
    D) Using speed gauges

52. What is the weight acting on unit areas around a specific point in the liquid?
    A) The total weight of the liquid
    B) The weight of the column of liquid above that point
    C) The weight of the body present in the liquid
    D) The weight of the atmosphere
53. What is hydrostatic pressure?
    A) Pressure caused by air
    B) Pressure exerted by water on any body below the water surface
    C) Pressure caused by gravity
    D) Pressure caused by heat
54. How does hydrostatic pressure change as depth increases?
    A) It remains constant
    B) It decreases
    C) It increases
    D) It diminishes
55. What is the atmospheric pressure at sea level?
    A) 0.5 atm
    B) 1 atm = 1.013×10^5 N/m²
    C) 2 atm
    D) 0.8 atm
56. How much does water pressure increase for every 10 meters of depth?
    A) One atmospheric pressure
    B) Half atmospheric pressure
    C) Double atmospheric pressure
    D) Triple atmospheric pressure
57. What are the characteristics of organisms that live in the mid depths?
    A) Less specialized to handle pressure
    B) Adapted to cope with increasing pressure
    C) Depend on sunlight
    D) Require air for breathing
58. How do deep-sea organisms adapt to high pressure?
    A) By increasing their size
    B) By having compact body structures
    C) By possessing gas bladders
    D) By reducing weight

59. What is the difference between bony fish and cartilaginous fish?
    A) Bony fish are more flexible
    B) Cartilaginous fish have a bony structure
    C) Bony fish have a skeletal structure made of bones, while cartilaginous fish have a cartilaginous structure
    D) Cartilaginous fish are heavier
60. What is the function of cell membranes in deep-sea organisms?
    A) Supporting the skeletal structure
    B) Enhancing membrane flexibility and preventing collapse
    C) Storing energy
    D) Transporting oxygen
61. How do lipoproteins prevent the effects of pressure on cell membranes?
    A) They increase their density
    B) They enhance their flexibility
    C) They reduce their size
    D) They increase their thickness
62. What is a characteristic of sharks compared to bony fish?
    A) They have a bony structure
    B) They have a cartilaginous structure
    C) They need more oxygen
    D) They prefer shallow waters
63. How does a ray fish adapt to high pressure?
    A) By increasing its weight
    B) By using a gas-filled bladder
    C) By increasing body density
    D) By reducing body size
64. How does hydrostatic pressure affect the structure of marine organisms?
    A) It makes them more rigid
    B) It requires physiological adaptations
    C) It leads to their weakening
    D) It has no effect on them

65) All of the following is false except …………………..

a) Pure liquid's boiling point is higher than that of the solution
b) As solute concentration increases, boiling point of solution decreases
c) Vapor pressure of the solution depends on the solute nature
d) All sentences are wrong

66) Collective properties of solution depends on…………..

a) The nature of the solute particles dissolved in solution
b) The number of solute particles in solution
c) The physical properties of the solute particles dissolved in solution
d) The nature of the solvent

67) Sprinkling of salt helps in clearing the snow-covered roads in hilly areas to…………………………

a) Reduce the amount of ice formed on the roads
b) Reduce freezing point of the snow from 0°C to lower
c) Lower the freezing point of water
d) All of the above

68) Low vapor pressure of solution is due to………………

a- Strong solute-solute attractions b- Strong solute-solvent attractions

c- Strong solvent-solvent attractions d- Weak solute-solvent attractions

69) High vapor pressure of pure liquid is due to……………….

a- Strong solute-solute attractions b- Strong solute-solvent attractions

c- Weak solvent-solvent attractions d- Weak solute-solvent attractions

70) The amount of solute in a given volume of solvent is…………..

a- Solution b- Dilution c- Concentration d- Density

71) Density of water is inversely proportional to the concentration of solute in solution.

a-True b- False

72)Which of the following statements is true?

a) Freshwater fish can easily adapt to saltwater environment
b) Marine organisms adapt to low levels of salt
c) Polluted environments support marine life
d) Droghts and current affect the distribution of marine life

- 1) How does the light gradient affect the distribution of marine organisms in the deep?







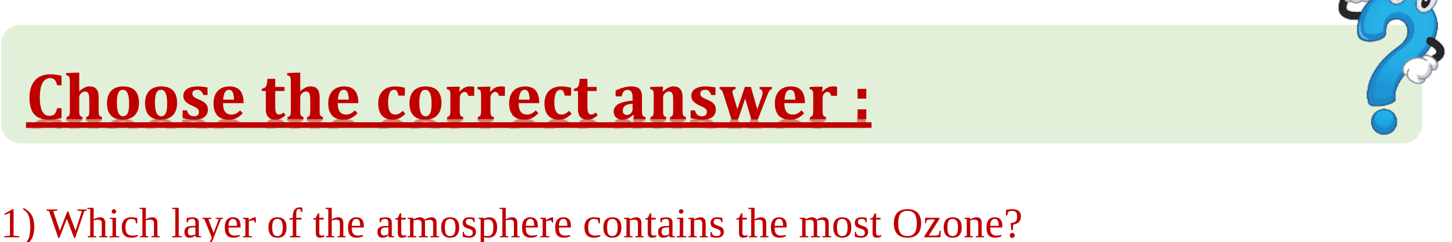

- 2) Why is photosynthesis important for maintaining ecological balance in the oceans?
- 3) How do the concentrations of solutes affects the density of water?
- 4) What is the relationship between the concentration of dissolved materials and the movement of water currents?
- 5) How do chemical solutions in water affect the distribution of marine organisms?









Choose the correct answer :

1) Which layer of the atmosphere contains the most Ozone?

a- Troposphere b-Stratosphere c- Mesosphere d-Ionosphere

2) Which layer of the atmosphere do most atmospheric phenomena such as rain and wind occur?

a- Troposphere b- Mesosphere c- Stratosphere d-Ionosphere

3) Which layer of the atmosphere is used for telecommunication?

a- Troposphere b- Mesosphere c- Stratosphere d-Ionosphere

4) The two most common gases in the atmosphere are

a- Nitrogen & oxygen. b- Nitrogen & carbon dioxide

c-Oxygen & argon d-Argone & carbon dioxide

5) What is the function of the ozone layer?

a-Allow UV rays to get to Earth b- Block UV rays from getting to Earth

c- Keep oxygen in d-Allow meteors to get to Earth

6) Which of the following gases doesn't share in the chemical reaction under normal conditions?

a- Oxygen b- Nitrogen c- Argon d- Both (b) and (C)

7) Barometer is a device used in measurement of………………..

a- Atmospheric pressure b- Gravity c- Density d- Humidity

8) Wind blow…………………..

a) From areas of high atmospheric pressure to areas of low atmospheric pressure
b) From areas of low atmospheric pressure to areas of high atmospheric pressure
c) Only at areas above normal atmospheric pressure
d) Only at areas below normal atmospheric pressure

9) The normal atmospheric pressure is equivalent to…………..

a- 101300 millibar b- 1013 N/m^2 c- 760 cmHg d- 76 cmHg

10. What does the atmosphere protect the Earth from?
 A) Solar radiation and objects from space
 B) Sunlight
 C) Other planets
 D) Earth's gravity

11. What is the main gas in Earth's atmosphere?
 A) Oxygen
 B) Carbon dioxide
 C) Nitrogen
 D) Argon

12. Which gas is essential for respiration?
 A) Carbon dioxide
 B) Oxygen
 C) Nitrogen
 D) Argon

13. Which gas is chemically inactive in the atmosphere?
 A) Nitrogen
 B) Oxygen
 C) Argon
 D) Carbon dioxide

14. What percentage of the atmosphere is carbon dioxide?
 A) 0.93% B) 78%
 C) 21% D) 0.04%

15. Which gas is essential for plant photosynthesis?
 A) Oxygen
 B) Nitrogen
 C) Carbon dioxide
 D) Argon
 D) Nitrogen

16. What role does water vapor play in the atmosphere?
 A) It supports photosynthesis.
 B) It contributes to weather and climate phenomena.
 C) It stabilizes temperature.
 D) It absorbs ultraviolet radiation.

17. What does the ozone layer absorb?
    A) Infrared radiation
    B) Short-wave ultraviolet radiation
    C) Gamma rays
    D) Visible light
18. Which gas is harmful to organisms when present at Earth's surface?
    A) Oxygen
    B) Nitrogen
    C) Ozone
    D) Carbon dioxide
19. Which gas is considered the most inert in the Earth's atmosphere?
    A) Oxygen
    B) Nitrogen
    C) Carbon dioxide
    D) Argon
20. What is the closest layer of the atmosphere to Earth's surface?
    A) Stratosphere
    B) Troposphere
    C) Mesosphere
    D) Thermosphere
21. How thick is the troposphere at the equator?
    A) 18 km
    B) 8 km
    C) 12 km
    D) 24 km
22. What happens to air temperature as you go higher in the troposphere?
    A) It increases
    B) It remains the same
    C) It decreases
    D) It fluctuates
23. What is the reason for the decrease in temperature with altitude in the troposphere?
    A) Higher solar radiation
    B) Decrease in atmospheric pressure
    C) Lack of oxygen
    D) Movement of clouds

24. In which layer do most weather phenomena like cloud formation and rainfall occur?
   A) Stratosphere
   B) Thermosphere
   C) Troposphere
   D) Mesosphere
25. What unit is typically used to measure atmospheric pressure on weather maps?
   A) Pascal
   B) Bar
   C) Millibar
   D) Atmosphere
26. What are lines connecting points of equal atmospheric pressure on weather maps called?
   A) Isobars
   B) Isoheights
   C) Contours
   D) Pressure lines
27. What does the letter 'H' symbolize on a weather map?
   A) High atmospheric temperature
   B) High barometric pressure
   C) Humidity
   D) Hot weather
28. In which direction does air move in relation to atmospheric pressure?
   A) From low pressure to high pressure
   B) From high pressure to low pressure
   C) In a circular motion
   D) Along the isobars
29. Which layer of the atmosphere is responsible for the weather?
   A) Mesosphere
   B) Stratosphere
   C) Troposphere
   D) Exosphere
30. What happens to air pressure as altitude increases?
   A) It increases
   B) It remains the same
   C) It decreases
   D) It fluctuates

31. What is the primary factor that affects atmospheric pressure at different points?
    - A) Temperature
    - B) Humidity
    - C) The height of the air column above the point
    - D) Wind speed
32. Why is atmospheric pressure important for weather patterns?
    - A) It determines the amount of solar radiation reaching Earth.
    - B) It causes differences in temperature.
    - C) It affects wind movement and weather changes.
    - D) It creates gravity.
33. What is the height difference between the two mercury levels in a standard barometer at normal atmospheric pressure?
    - A) 500 mm
    - B) 660 mm
    - C) 760 mm
    - D) 1013 mm
34. What layer of the atmosphere contains the ozone layer?
    - A) Troposphere
    - B) Stratosphere
    - C) Mesosphere
    - D) Ionosphere
35. Why does the temperature rise as we go higher in the stratosphere?
    - A) Decrease in air pressure
    - B) Increase in humidity
    - C) The presence of ozone gas
    - D) High wind speeds
36. In which layer do most meteors burn up, protecting Earth from them?
    - A) Troposphere
    - B) Stratosphere
    - C) Mesosphere
    - D) Ionosphere
37. Which layer of the atmosphere is electrically charged due to ionization?
    - A) Troposphere
    - B) Stratosphere
    - C) Mesosphere
    - D) Ionosphere

38. Why is the ionosphere important for radio communications?
A) It amplifies sound waves.
B) It blocks radiation from the sun.
C) It reflects radio waves, enabling long-distance communication.
D) It absorbs high-frequency signals.

- 39) What is the percent of oxygen in the atmosphere? Why is this percentage important?

- 40) List the layers of the atmosphere in order from closest to Earth to farthest away.

- 41) Explain how the ozone layer protects life on Earth








Exercises: lesson (2) - Chapter (2)

Choose the correct answer :

1) A thermometer reads a temperature of 10°C which is equivalent to ....

a- 273 Kelvin b- 283 Kelvin c-20 Fehreinht d- 5 Fehreinht

2) Heat transfer due to direct contact between 2 objects is called……….

a- Conduction b-Convection c- Radiation d-None of the above

3) Which of the following is not a method of heat transfer?

a-Conduction b-Convection c-Active transport d-Radiation

4) What is heat transfer?

a) Flow of thermal energy from low-temperature reservoir to high-temperature reservoir
b) Flow of thermal energy from high-temperature reservoir to low-temperature reservoir
c) Flow of thermal energy irrespective of reservoir temperature
d) None of the above

5) The fact that, in general, liquids and gases expand when heated gives rise to..............

a) Convection currents in fluids due to changing masses
b) Convection currents in fluids due to changing densities
c) Heat transfer by conduction
d) Convection currents in fluids due to constant temperature

6) Choose the correct statement among the following?

a) All areas on Earth are heated by the sun with the same rate
b) The thermal flight by birds are due to heat transfer through radiation
c) The areas with low atmospheric pressure are rich in oxygen content
d) The main cause of wind blowing is pressure difference

7) Relative humidity of air is…….. proportional to transpiration & .... proportional to evaporation.

a- Direct-direct   b- Inverse-inverse   c- Inverse direct   d- Direct-inverse

8) Which of the following can adapt to extremely low temperature conditions?

a-Wood frog   b-Icefish   c- Desert lizard   d- Both (A) and (B)

9) Which of the following can adapt to extremely high temperature conditions?

a-Wood frog   b-Icefish   c- Desert lizard   d- Both (A) and (B)

10) Desert lizard can adapt to extremely elevated temperature by…….

a- Seeking shade or burrowing   b-water retention

c-tolerate high body temperatures   d-All of the above

11) Which of the following agents help icefish to adapt in low temperature?

a-Lipids   b-Buffers   c-Antifreeze   d-Viscosity agent

12) Which of the following organisms doesn't produce hemoglobin?

a- Wood frog   b-Desert lizard   c-icefish   d- Both (A) and (c)

13. Which areas receive more heat energy per unit area?
   a) Areas where the sun's rays are inclined
   b) Areas with vertical or nearly vertical sun rays
   c) Areas near the poles
   d) Areas covered by forests

14. Which scale is used to measure temperature in Egypt?
   a) Fahrenheit scale
   b) Kelvin scale
   c) Celsius scale
   d) Rankine scale

15. What does the Kelvin scale measure?
   a) Temperature in daily weather reports
   b) Absolute temperature in scientific fields
   c) Sea temperature
   d) Wind speed

16. Which of the following does not affect weather and climate?
    a) Temperature
    b) Solar radiation
    c) Gravity
    d) Humidity
17. What do meteorological organizations periodically measure?
    a) Wind speed
    b) Air pressure
    c) Air temperature
    d) Rainfall
18. What happens when atmospheric pressure decreases?
    a) The temperature increases
    b) The wind speed decreases
    c) The temperature decreases
    d) The humidity increases
19. Which of the following is NOT a scale used to measure temperature?
    a) Celsius
    b) Fahrenheit
    c) Kelvin
    d) Newton
20. Why are the layers of the atmosphere closest to the Earth warmer?
    a) They are more affected by sunlight
    b) They have less air pressure
    c) They have higher levels of oxygen
    d) They contain more water vapor
21. Which factor contributes to condensation in the atmosphere?
    a) Wind speed
    b) Temperature decrease
    c) Increased solar radiation
    d) Higher air pressure
22. What is the transfer of heat through a solid object called?
    a) Convection
    b) Radiation
    c) Conduction
    d) Insulation








23. Which material has high thermal conductivity?
    a) Wood
    b) Plastic
    c) Metal
    d) Glass

24. What natural phenomenon utilizes convection currents for efficient movement?
    a) Birds in thermal flight
    b) Trees growing
    c) Rocks forming
    d) Clouds forming

25. Which heat transfer method does not require a medium to travel through?
    a) Convection
    b) Conduction
    c) Radiation
    d) Insulation

26. What is thermal radiation?
    a) Heat transfer through solid objects
    b) Heat transfer by direct contact
    c) Heat transfer in the form of electromagnetic waves
    d) Heat transfer through fluids

27. Which of the following is an example of heat transfer by radiation?
    a) Heat from a stove warming a pot
    b) Sunlight warming the Earth's surface
    c) Heat moving through a metal rod
    d) Boiling water in a kettle

28. What happens to less dense parts of a fluid in convection?
    a) They sink
    b) They rise
    c) They solidify
    d) They evaporate

29. Which of the following is an example of conduction?
    a) The warmth of the sun on your skin
    b) A metal spoon heating up in hot soup
    c) A bird gliding in warm air
    d) Air moving in a heated room

30. What kind of heat transfer is used when cooking food directly over a fire?
    a) Radiation
    b) Convection
    c) Conduction
    d) Insulation
31. Which of the following does NOT involve radiation?
    a) Sunlight heating the Earth
    b) A microwave heating food
    c) A metal rod heating up when placed in a flame
    d) Heat from a campfire warming your hands
32. Why does heat move from hot to cold areas in conduction?
    a) Hot particles move to cold regions
    b) Cold particles move to hot regions
    c) Energy is transferred from high temperature to low temperature regions
    d) Heat does not move in conduction
33. What type of weather is usually found in low-pressure areas?
    a) Stable and dry
    b) Windy and rainy
    c) Calm and sunny
    d) Cloudy but dry
34. What causes wind to blow?
    a) The rotation of the Earth
    b) Differences in atmospheric pressure
    c) Earth's magnetic field
    d) The position of the moon
35. What kind of winds blow from high-pressure areas near the poles?
    a) Tropical winds
    b) Polar winds
    c) Trade winds
    d) Jet streams
36. Why is there less oxygen available in high-altitude, low-pressure areas?
    a) The air is colder
    b) Air pressure is higher
    c) The amount of air molecules is lower
    d) There is more carbon dioxide

37. What instrument is used to measure the percentage of moisture in the air?
    a) Thermometer
    b) Barometer
    c) Hygrometer
    d) Anemometer
38. What happens to animals' ability to cool down when humidity is high?
    a) It increases
    b) It decreases
    c) It remains the same
    d) They cool down faster
39. What is the primary cause of wind?
    a) Differences in air temperature
    b) Rotation of the Earth
    c) Movement of air from high to low-pressure areas
    d) Solar radiation
40. Which organism has adapted to survive freezing temperatures?
    a) Polar bear
    b) Wood frog
    c) Arctic fox
    d) Emperor penguin
41. How does wind affect the climate?
    a) It only affects cold regions
    b) It distributes heat and moisture in the atmosphere
    c) It decreases air temperature globally
    d) It increases humidity everywhere
42. What happens to the wood frog when temperatures rise in the spring?
    a) It dies
    b) Its bodily functions resume
    c) It remains frozen
    d) It sheds its skin
43. How does the Antarctic icefish obtain oxygen?
    a) Through its skin
    b) By absorbing oxygen directly from the oxygen-rich waters
    c) By using gills with hemoglobin
    d) By breathing air

44. Where does the desert lizard live?
   a) In cold regions
   b) In tropical rainforests
   c) In deserts with extremely high temperatures
   d) In freshwater lakes

45. What behavioral adaptation do desert lizards use to survive the heat?
   a) They drink large amounts of water
   b) They seek shade or burrow during the hottest parts of the day
   c) They migrate to cooler areas
   d) They remain active all day

46. What physiological adaptation helps desert lizards survive in dry environments?
   a) Efficient water retention
   b) Larger lungs
   c) Ability to swim
   d) Faster metabolism

47. How does the thorny devil lizard's skin adaptation help it survive in extreme environments?
   a) It helps it blend into its surroundings
   b) It allows the lizard to collect and drink moisture from the air and sand
   c) It stores extra fat for energy
   d) It reflects sunlight to stay cool

13) What is the relation between atmospheric pressure and temperature in the atmosphere?

14) How do physical factors such as temperature, pressure, and humidity affect daily weather and long-term climate?








Exercises: lesson (3) - Chapter (2)

Choose the correct answer :

1) Which of the following chemical reactions is one of the main reasons for ozone formation in the stratosphere?

a) Reaction of nitrogen oxide with carbon dioxide
b) Reaction of oxygen with ultraviolet radiation
c) Reaction of water vapor with carbon
d) Reaction of ozone with sulfur oxide

2) Which the chemical compound is responsible for the formation of smog in major cities due to the reaction between nitrogen oxides and hydrocarbons?

A-Ozone b-Nitrogen oxide c- Sulfur dioxide d- Carbon dioxide

3) Which compound is produced from the reaction of nitrogen oxide with ozone in the atmosphere, contributing to air pollution?

a-Nitrous oxide b- Nitric oxide c- Ozone d-Nitrogen dioxide

4) Ozone is formed when oxygen reacts with UV radiation with a wavelength equals……………..
a-500 nm b-350 nm c- 300 nm d-230 nm

5) Air pollution is contributed to………………
a-Cancer b- Growth retardation
c-Cardiovascular diorders d- All of the above

6) Ozone is contributed to……………
a-Materials corrosion b- Health issues
c- Climate changes d-All of the above

7. What type of radiation is responsible for breaking oxygen molecules (O_2) to form ozone?
a) Infrared radiation
b) X-ray radiation
c) Ultraviolet (UV) radiation
d) Microwave radiation

8. What is the importance of the ozone layer?
   a) It provides oxygen to humans
   b) It absorbs harmful ultraviolet radiation
   c) It traps heat for the Earth
   d) It prevents global warming
9. What is smog primarily composed of?
   a) Ozone, nitrogen oxides, sulfur dioxide, and fine particles
   b) Carbon dioxide and oxygen
   c) Nitrogen and water vapor
   d) Ozone and oxygen
10. In which part of the atmosphere is ozone considered harmful?
   a) Stratosphere
   b) Troposphere
   c) Mesosphere
   d) Exosphere
11. What kind of health issues can ozone cause?
   a) Skin rashes and headaches
   b) Eye, nose, and throat irritation, breathing issues, asthma
   c) Hearing loss and stomach pain
   d) Weak bones and hair loss
12. What is one environmental effect of ozone in the troposphere?
   a) It helps purify the air
   b) It leads to acid rain
   c) It causes corrosion of materials like plastics and rubber
   d) It reduces soil fertility
13. Which of the following is a greenhouse gas contributing to climate change?
   a) Carbon monoxide
   b) Ozone
   c) Helium
   d) Nitrogen
14. What is the process by which UV radiation breaks oxygen molecules into individual atoms called?
   a) Dissociation
   b) Sublimation
   c) Photo dissociation
   d) Evaporation

15. What is one negative impact of the greenhouse effect caused by ozone in the troposphere?
    a) Rising temperatures and changing weather patterns
    b) More sunlight reaching the Earth's surface
    c) Increased oxygen levels
    d) Decreased rainfall
16. Why is ozone beneficial in the stratosphere but harmful in the troposphere?
    a) It reflects UV radiation in the stratosphere but traps heat in the troposphere
    b) It creates clouds in the stratosphere but causes acid rain in the troposphere
    c) It helps plants grow in the stratosphere but kills plants in the troposphere
    d) It forms storms in the stratosphere but calms winds in the troposphere
17. What material can ozone damage in the troposphere?
    a) Glass
    b) Metal
    c) Plastic and rubber
    d) Stone
18. Which of the following is an effect of air pollution caused by ozone?
    a) Increase in global oxygen levels
    b) Development of smog and associated health risks
    c) Reduction of global temperature
    d) Decrease in solar radiation
19. What are the primary sources of air pollution?
    a) Volcanoes and solar flares
    b) Natural sources like volcanoes and human activities like vehicle emissions
    c) Ocean currents and wildfires
    d) Animal migration and dust storms
20. Which of the following gases is a major contributor to global warming?
    a) Oxygen (O_2)
    b) Nitrogen (N_2)
    c) Carbon dioxide (CO_2)
    d) Helium (He)

21. Which of the following respiratory diseases is linked to air pollution?
   a) Asthma
   b) Diabetes
   c) Alzheimer's
   d) Arthritis
22. Which pollutant is associated with an increased risk of cancer?
   a) Oxygen
   b) Benzene
   c) Nitrogen
   d) Carbon monoxide
23. How does tropospheric ozone affect plants?
   a) It stimulates photosynthesis
   b) It damages leaves and reduces their ability to perform photosynthesis
   c) It helps in water retention
   d) It enhances root growth
24. Which type of animal is directly impacted by air pollution, influencing pollination rates?
   a) Fish
   b) Bees
   c) Elephants
   d) Wolves
25. What is one strategy to reduce vehicle emissions and air pollution?
   a) Using private cars more frequently
   b) Using public transportation
   c) Building more highways
   d) Driving faster to reduce travel time
26. What is one positive environmental impact of planting more trees?
   a) Increasing carbon dioxide levels
   b) Enhancing air quality by absorbing pollutants
   c) Reducing oxygen levels in the atmosphere
   d) Increasing soil erosion
27. Which cardiovascular disease is linked to air pollution exposure?
   a) Heart disease
   b) Skin cancer
   c) Arthritis
   d) Migraine

28. Which pollutant is known to damage plant leaves and reduce photosynthesis?
  a) Carbon monoxide
  b) Ozone (O_3)
  c) Nitrogen gas
  d) Methane

29. Which strategy can help reduce emissions from factories?
  a) Using renewable energy sources
  b) Increasing coal usage
  c) Building more factories
  d) Using less efficient technology

30. How does air pollution affect the reproduction of animals like birds and insects?
  a) It increases their reproductive rate
  b) It negatively influences their behavior and reproduction
  c) It causes them to migrate less frequently
  d) It strengthens their offspring

31. What is one impact of rising sea levels caused by climate change?
  a) Increased mountain formation
  b) Coastal flooding
  c) Lower global temperatures
  d) Expansion of deserts

32. Which human activity is a significant source of air pollution?
  a) Planting trees
  b) Vehicle emissions
  c) Walking and cycling
  d) Drinking water

33. Which of the following is an example of a natural source of air pollution?
  a) Factory emissions
  b) Volcanoes
  c) Car exhaust
  d) Burning fossil fuels

34. What effect does air pollution have on bees?
  a) Enhances their pollination rates
  b) Reduces their population, affecting pollination
  c) Strengthens their immune systems
  d) Improves their navigation abilities

35. Which of the following gases is not a greenhouse gas?
    a) Carbon dioxide
    b) Oxygen
    c) Methane
    d) Nitrous oxide
36. How does using public transport help reduce air pollution?
    a) By increasing traffic
    b) By decreasing vehicle emissions per person
    c) By increasing the number of vehicles on the road
    d) By reducing the availability of cars
37. How can creating more green spaces reduce air pollution?
    a) By releasing more pollutants
    b) By absorbing pollutants from the air
    c) By reducing oxygen levels
    d) By increasing the urban heat effect
38. What is a common environmental issue caused by carbon dioxide and methane emissions?
    a) Decrease in global temperatures
    b) Global warming
    c) Increased biodiversity
    d) Formation of icebergs










Exercises: lesson (4) - Chapter (2)

Choose the correct answer :

1) The escape velocity from gravity of Earth planet is about……….

a- 9.2 km/s b- 11.2 km/s c- 10.2 km/s d-12.2 km/s

2) Escape velocity is a constant value for all planets in the solar system.

a- True b- False

3) The gas can escape from planet's gravity when…………..

a- Ve > Vrms b- Ve <Vrms c- Ve =Vrms d- Both (B) and (C)

4) Which of the following statements is not true?

a) Desert plants prefer growing in low humidity
b) Tropical plants prefer growing in high humidity
c) In mercury, Ve exceeds Vrms
d) None of the above

5. What is a major contributor to global warming?
   a) Photosynthesis
   b) Burning of fossil fuels
   c) Solar energy
   d) Wind energy
6. How do greenhouse gases affect the Earth's temperature?
   a) They cool the atmosphere
   b) They trap heat in the atmosphere
   c) They have no effect on temperature
   d) They increase ozone levels
7. What is a consequence of rising sea levels due to global warming?
   a) Decreased ocean temperatures
   b) Increased coastal flooding
   c) Expansion of polar habitats
   d) Growth of marine life

8. How can changes in the atmosphere affect living organisms?
   a) By improving their habitat
   b) By reducing their ability to survive and thrive
   c) By increasing their population
   d) By enhancing their reproduction rates
9. What happens to the Earth's surface temperature if the atmosphere's composition changes?
   a) It becomes more stable
   b) It can no longer maintain suitable temperatures for life
   c) It remains unchanged
   d) It cools down significantly
10. Which gas is primarily associated with the greenhouse effect?
   a) Oxygen (O_2)
   b) Nitrogen (N_2)
   c) Carbon dioxide (CO_2)
   d) Hydrogen (H_2)
11. Why is it important to protect the atmosphere?
   a) To maintain biodiversity and support life
   b) To increase fossil fuel consumption
   c) To promote urbanization
   d) To reduce global temperatures drastically
12. What effect do greenhouse gases have on thermal radiation?
   a) They allow it to escape freely into space
   b) They block its passage to outer space
   c) They convert it into solar radiation
   d) They decrease its wavelength
13. Which of the following is a negative effect of global warming?
   a) Increased biodiversity
   b) Extinction of polar creatures
   c) Stabilization of weather patterns
   d) Decrease in ocean temperatures
14. What severe climate change events can result from global warming?
   a) Stable weather
   b) Hurricanes, floods, and droughts
   c) Decreased rainfall
   d) Cooler temperatures

15. What is one proposed solution to combat climate change?
    a) Increasing fossil fuel usage
    b) Expanding the use of renewable energy
    c) Reducing tree planting
    d) Ignoring carbon emissions
16. Which of the following is NOT a source of renewable energy?
    a) Solar power
    b) Wind power
    c) Coal power
    d) Hydropower
17. Why is the increase in greenhouse gases a concern for biodiversity?
    a) It leads to more diverse ecosystems
    b) It enhances natural habitats
    c) It damages natural habitats, leading to species extinction
    d) It reduces human intervention in ecosystems
18. Which of the following gases is primarily responsible for trapping heat in the atmosphere?
    a) Nitrogen (N_2)
    b) Methane (CH_4)
    c) Argon (Ar)
    d) Helium (He)
19. Why is the Egyptian state interested in increasing green spaces in new cities?
    a) To beautify urban areas
    b) To reduce carbon dioxide and combat global warming
    c) To increase construction costs
    d) To promote tourism
20. What is the main role of photosynthesis in plants?
    a) Absorbing oxygen
    b) Producing carbon dioxide
    c) Absorbing carbon dioxide and producing oxygen
    d) Releasing heat
21. What is the escape velocity from Earth's gravity?
    a) 9.8 km/s
    b) 11.2 km/s
    c) 15 km/s
    d) 7.9 km/s

22. Which of the following is a summer crop?
   a) Wheat
   b) Tomato
   c) Barley
   d) Potato
23. What is one impact of higher temperatures on agriculture?
   a) Improved crop yields
   b) Negative effects on production
   c) Increased biodiversity
   d) Longer growing seasons
24. What can high atmospheric pressure lead to?
   a) Stable weather conditions
   b) Increased rainfall
   c) Formation of hurricanes
   d) Flooding
25. How does the presence of trees help the environment?
   a) They decrease soil fertility
   b) They provide shade only
   c) They absorb carbon dioxide and improve air quality
   d) They create barriers to wind
26. What happens when the effective velocity of gas molecules is less than escape velocity?
   a) The gas escapes into space
   b) The gas is retained by the planet
   c) The gas disappears completely
   d) The planet loses its atmosphere
27. Which factor does NOT influence the growth of agricultural crops?
   a) Temperature
   b) Atmospheric pressure
   c) Moon phases
   d) Humidity
28. What role does humidity play in plant growth?
   a) It has no impact
   b) It can enhance or hinder growth depending on the plant species
   c) It only affects flowering plants
   d) It increases photosynthesis universally

29. What is one method to help mitigate global warming?
    a) Increasing fossil fuel consumption
    b) Expanding green spaces
    c) Reducing tree planting
    d) Ignoring carbon emissions
30. How do trees contribute to reducing global warming?
    a) They release more carbon dioxide than they absorb
    b) They provide shade and lower local temperatures
    c) They enhance air pollution
    d) They absorb carbon dioxide during photosynthesis
31. What can cause a decrease in biodiversity?
    a) Increase in tree planting
    b) Climate change and habitat loss
    c) Improved agricultural practices
    d) Conservation efforts
32. What adaptation do organisms need to survive temperature changes?
    a) Increased size
    b) Behavioral and physiological changes
    c) Decreased metabolism
    d) No adaptations needed
33. What is a critical component of a planet's atmosphere for supporting life?
    a) A high concentration of nitrogen
    b) A balance of gases including oxygen and carbon dioxide
    c) Lack of moisture
    d) Absence of greenhouse gases
34. Which type of plants requires high humidity to thrive?
    a) Desert plants
    b) Tropical plants
    c) Arctic plants
    d) Temperate plants
35. What type of humidity do desert plants prefer for optimal growth?
    a) High humidity
    b) Moderate humidity
    c) Low humidity
    d) No humidity

36. What is one major effect of air pollution on human health?
    a) Improved respiratory function
    b) Decreased risk of allergies
    c) Increased incidence of respiratory diseases
    d) Enhanced immune response
37. How does air pollution affect wildlife?
    a) It has no effect
    b) It may lead to the extinction of some species
    c) It improves reproduction rates
    d) It enhances biodiversity
38. Which of the following diseases is linked to air pollution?
    a) Diabetes
    b) Asthma
    c) Heart disease
    d) Both b and c
39. What role does humidity play in the growth of tropical plants?
    a) It inhibits growth
    b) It is essential for their growth
    c) It has no role
    d) It slows down photosynthesis
40. Which environmental factor can lead to a decline in plant health due to air pollution?
    a) High soil fertility
    b) Clean air
    c) Increased ozone levels
    d) Adequate sunlight
41. How can air pollution indirectly affect humans?
    a) By improving crop yields
    b) By damaging ecosystems that provide food
    c) By decreasing oxygen levels in the atmosphere
    d) By increasing plant growth

5) How do changes in the atmosphere affect everyday life?

6) What are some possible solutions to climate change and air pollution?

7) Why does Earth's gravity hold the atmosphere and not let go?












Choose the correct answer :

1) Soils characterized by their ability to hold water, but are poorly aerated are………………..

a- Clay soils b-Calcareous soils c- Sandy soils d- Loamy soils

2) Which type of soil contains uniformly sized sediments, making it a poor water holding soil?

a- Clay soils b- Sandy soils c- Humic soils d- Alluvial soils

3) Which soil zone contains the greatest amount of humus?

a- Soil surface b- Subsoil surface c- Disintegrated rock d-Bedrock

4) Which gives topsoil its dark color?

a- Rock particles b- More water

c-Larger rock pieces d- Decaying living things

5) Which layer of soil is most important for plant growth?

a-Topsoil b- Subsoil c- Bedrock d- Both (A) and (C)

6) Which of the following soils is considered the least suitable for cultivation?

a-Clay soils b- Silt soils c- Sandy soils d-All of the above

7) What is the dark, organic material that helps making soil fertile?

a- Horizon b- Humus c- Bedrook d-None of the above

8) What is a soli horizon?

a) Factor influencing how soil is formed b-Organism found within the soil

c)Layer of the soil d-Technique used to map soils

9) Which soil horizon has the most fertile soil?

a-Bedrock b- Horizon C c- Horizon A d- Horizon B

10) What is the term for the general process by which rocks are broken down at the Earth's surface?

a- Deposition b- Erosion c- Lithification d- Weathering

11. What is the primary function of soil for most plants?
a) To anchor them in place
b) To provide shade
c) To supply nutrients and water
d) To absorb sunlight

12. What are the key components that make up soil?
a) Water, minerals, air, and organic matter
b) Only minerals and water
c) Rocks and sand
d) Clay and silt only

13. What process contributes to soil formation?
a) Plant growth b) Erosion
c) Weathering of rocks d) Photosynthesis

14. What type of soil is often best for plant growth?
a) Sandy soil
b) Clay soil
c) Loamy soil
d) Rocky soil

15. What happens when soil is depleted or destroyed?
a) It improves plant health
b) It has no effect on the environment
c) It threatens food security and ecosystems
d) It enhances soil fertility

16. Which of the following factors can affect soil composition?
a) Climate and vegetation
b) Only the type of rock present
c) Time of day
d) None of the above

17. Why is it important to manage soil scientifically?
a) To prevent soil erosion and depletion
b) To make it easier for plants to grow
c) To increase the amount of clay
d) To reduce the number of rocks in the soil

18. Which process describes the breakdown of rocks due to repeated freezing and thawing of water?
    a) Chemical weathering
    b) Biological weathering
    c) Physical weathering
    d) Soil erosion
19. What role does gravity play in soil formation?
    a) It has no effect
    b) It assists in transporting nutrients
    c) It helps in the fragmentation of rocks
    d) It increases soil temperature
20. What is chemical weathering?
    a) The physical breakdown of rocks
    b) The decomposition of minerals due to chemical reactions
    c) The action of living organisms on rocks
    d) The erosion of soil
21. Which of the following is a product of chemical weathering?
    a) Sand
    b) Clay minerals
    c) Rocks
    d) Soil texture
22. What is biological weathering?
    a) Breakdown of rocks by temperature changes
    b) The mechanical erosion of rocks
    c) The decomposition of rocks by living organisms
    d) Soil compaction
23. Which living organisms contribute to biological weathering?
    a) Only plants
    b) Only animals
    c) Plants, animals, and microorganisms
    d) Only bacteria
24. What is humus?
    a) A type of mineral
    b) Decomposed organic matter in soil
    c) Solid rock material
    d) Fresh plant material

25. What is the most important source of organic matter in soil?
a) Water
b) Fertilizers and plant crop residues
c) Sand
d) Air

26. Which of the following organisms helps improve soil structure?
a) Earthworms
b) Only fungi
c) Bacteria only
d) Rocks

27. Which soil component affects its water retention capability?
a) Only minerals
b) Only organic matter
c) Both minerals and organic matter
d) None of the above

28. What impact do plant roots have on rocks?
a) They do not affect rocks
b) They contribute to mechanical weathering by breaking rocks apart
c) They create rocks
d) They only help with soil fertility

29. How can soil management contribute to environmental health?
a) It prevents soil erosion and maintains soil fertility
b) It reduces plant growth
c) It increases pollution
d) It makes soil less available

30. What role does water play in soil?
a) It makes soil dry
b) It helps in transporting nutrients to plants and organisms
c) It is not important for soil
d) It only helps in soil erosion

31. Which type of soil is better at retaining water?
a) Sandy soils
b) Clay soils
c) Loamy soils
d) Humid soils

32. Which horizon of the soil profile is rich in organic matter and nutrients?
   a) Horizon B
   b) Horizon C
   c) Horizon A
   d) None of the above
33. What is the primary characteristic of horizon B in the soil profile?
   a) It is dark in color and rich in humus
   b) It is clay-rich, less fertile, and retains more moisture
   c) It is composed of rocky material
   d) It has the highest biological activity
34. Which layer of the soil profile consists of the parent rock?
   a) Horizon A
   b) Horizon B
   c) Horizon C
   d) Horizon D
35. What determines the thickness of different soil horizons?
   a) The type of vegetation
   b) The bedrock type, organisms, climate, and weathering time
   c) The amount of rainfall
   d) The presence of animal life
36. What happens to clay soils when they are wet?
   a) They dry out completely
   b) They expand
   c) They become sandy
   d) They lose nutrients
37. Which of the following describes sandy soils?
   a) They have small pores
   b) They are poorly ventilated
   c) They drain water quickly
   d) They retain moisture for long periods
38. What is a disadvantage of sandy soils?
   a) They are too dense
   b) They are very fertile
   c) They dry out quickly and require regular irrigation
   d) They are difficult to cultivate

39. What are alluvial soils primarily composed of?
    a) Only clay
    b) A mixture of clay, sand, and silt
    c) Only sandy particles
    d) Organic matter only
40. How does alluvial soil behave when waterlogged?
    a) It retains moisture well
    b) It becomes weak
    c) It dries out quickly
    d) It becomes denser
41. What is a major role of soil in the ecosystem?
    a) Reducing air quality
    b) Supporting plant growth
    c) Causing erosion
    d) Absorbing solar energy
42. How does soil stabilize plant roots?
    a) By providing shade
    b) By supplying water directly
    c) By preventing drifting or falling
    d) By storing sunlight
43. Which soil type is most suitable for agriculture due to its fertility?
    a) Sandy soils
    b) Clay soils
    c) Alluvial soils
    d) Humid soils
44. What is the texture of sandy soils?
    a) Fine and smooth
    b) Coarse and grainy
    c) Sticky and dense
    d) Soft and fluffy
    d) All of the above

11) Why is orgaic material (humus) an important part of soil?

12) In a table, compare between different types of soil (water retention & fertility).

13) Explain with examples the role of gases in the soil.

14) Explain the roil of soil in the regulation of water cycle.








Exercises: lesson (2) - Chapter (3)



Choose the correct answer :

1) The use of petrochemical compounds to kill insects leads to………..

a- Blue baby syndrome b- Accumulation of salts in the soil

c-Liver cancer d-Increase of heavy metals in the soil

2) Growing a tomato crop in the same soil for several consecutive years leads to ……..

a- Impede the absorption of nutrients by the plants b- Soil compaction

c- Lack of nutrients in the soil d- Increase the soil salinity

3) Excessive use of nitrogen fertilizers leads to…………………

a-Blue baby syndrome b- Accumulation of salts in the soil

c-Liver cancer d-Increase of heavy metals in the soil

4) Excessive salts in soil is known as…………………

a-Soil compaction b-Soil degradation

c- Soil salinity d-None of the above

5) Mechanism by which groundwater containing salts transported to surface is…………….. (Osmosis /Diffusion/ Capillary action/ None of the above)

6) Soil compaction is mainly due to use of…………………

a- Nitrogen compounds b- High salt value

c- Heavy metals d- heavy agricultural machinery

7) Decreased water absorption capacity by the soil because of ....

a- Nitrogen compounds b- High salt value

c- Heavy metals d- heavy agricultural machinery

8. What happens to plant roots in compacted soil?
   A) They grow faster
   B) They have better access to nutrients
   C) They are hindered in growth
   D) They become more flexible
9. Which of the following is a common symptom of soil compaction in crops like wheat?
   A) Larger grains
   B) Increased water absorption
   C) Short, weak plants
   D) Increased pest resistance
10. What is a primary cause of salination in agricultural soils?
    A) Deforestation
    B) Flood irrigation
    C) Overuse of fertilizers
    D) Acid rain
11. In which region is soil salination commonly observed due to irrigation practices?
    A) Amazon Rainforest
    B) Sahara Desert
    C) Nile Valley in Egypt
    D) Great Plains of the USA
12. What happens to plants growing in saline soil?
    A) They absorb more water
    B) They grow larger roots
    C) They struggle to absorb water
    D) They produce more seeds
13. What is the result of repeated single-crop farming on soil?
    A) Improved soil fertility
    B) Increased soil nutrients
    C) Exhaustion of nutrients
    D) Decreased soil erosion
14. Which of the following methods can help prevent soil compaction?
    A) Using lighter agricultural machinery
    B) Increasing irrigation
    C) Planting only root crops
    D) Spraying pesticides regularly

15. Which of the following would NOT contribute to soil salination?
    A) Evaporation of groundwater
    B) Flood irrigation
    C) Planting trees
    D) Capillary action bringing salts to the surface
16. Which of the following is NOT a consequence of soil compaction?
    A) Improved plant root growth
    B) Decreased water absorption
    C) Hard soil layers beneath the surface
    D) Poor crop yields
17. What is one visible sign of salinated soil?
    A) Black patches on the surface
    B) Presence of a salt crust on the surface
    C) Plants with larger leaves
    D) Reduced erosion
18. Why is nutrient depletion harmful to soil?
    A) It increases the salinity
    B) It reduces the soil's ability to support healthy plant growth
    C) It makes the soil more compact
    D) It increases water retention
19. What causes salts to rise to the surface in the process of salination?
    A) Rainfall
    B) Capillary action
    C) Heavy winds
    D) Plant roots pulling salts upward
20. Which of the following practices can help reduce soil salination?
    A) Flood irrigation
    B) Regular tilling of the soil
    C) Reducing water evaporation
    D) Repeated planting of the same crop
21. Which of the following is a benefit of crop rotation for soil health?
    A) Prevents soil erosion
    B) Helps maintain soil nutrients
    C) Reduces water absorption
    D) Increases soil salinity
    Answer: B) Helps maintain soil nutrients

22. What are some common contaminants in the soil due to industrial waste?
    A) Phosphates and nitrates
    B) Lead and mercury
    C) Sulfur and calcium
    D) Potassium and magnesium
23. What happens to plants that grow in soil contaminated with heavy metals?
    A) They grow faster and healthier
    B) They become toxic to humans and animals
    C) They develop larger roots
    D) They absorb more water
24. Which industrial activities are responsible for soil contamination with toxic chemicals?
    A) Textile production
    B) Oil refineries and petrochemical factories
    C) Glass manufacturing
    D) Dairy farming
25. What substance from oil refineries is considered carcinogenic and contaminates the soil?
    A) Diesel
    B) Gasoline
    C) Sulfur dioxide
    D) Methane
26. How do nitrate compounds contaminate the soil in agricultural areas?
    A) By reducing the oxygen content in the soil
    B) Through excessive use of nitrogen fertilizers
    C) Due to acid rain
    D) From pesticide runoff
27. What is a negative impact of high nitrate levels in the soil?
    A) Increased plant growth
    B) Hindered absorption of other nutrients by plants
    C) Reduced soil water retention
    D) Improved soil aeration
28. What serious health issue can nitrate-contaminated water cause?
    A) Diabetes
    B) Blue Baby Syndrome
    C) Liver disease
    D) Hypertension

29. In which region is nitrate contamination of soil commonly observed due to fertilizer use?
    A) Amazon Rainforest
    B) Sahara Desert
    C) Egyptian Delta
    D) Himalayan Foothills
30. How can industrial activities affect groundwater quality?
    A) By increasing water pH
    B) Through the leaching of chemicals and nitrates into groundwater
    C) By increasing dissolved oxygen levels
    D) Through the introduction of minerals
31. What is a benefit of crop rotation for soil conservation?
    A) It increases soil contamination
    B) It reduces soil erosion
    C) It promotes heavy metal accumulation
    D) It depletes soil nutrients
32. What can help prevent soil erosion and maintain soil quality?
    A) Planting vegetation
    B) Using heavy machinery
    C) Burning organic waste
    D) Continuous irrigation
33. 16. How does organic farming help protect soil quality?
    A) By using synthetic fertilizers
    B) By reducing the use of pesticides
    C) By relying on natural fertilizers and biopesticides
    D) By increasing the use of chemical inputs
34. What is one of the main problems caused by soil contamination with heavy metals?
    A) Improved crop yields
    B) Toxicity to humans and animals
    C) Increased water retention in soil
    D) Faster plant growth
35. Which of the following is a carcinogenic substance often found in soil near oil refineries?
    A) Nitrogen
    B) Gasoline
    C) Phosphates
    D) Mercury

36. What environmental problem is linked to the excessive use of nitrogen fertilizers?
    A) Soil compaction
    B) Nitrate contamination
    C) Decreased soil pH
    D) Increased oxygen in the soil
37. How can biopesticides contribute to soil conservation?
    A) By increasing chemical contamination
    B) By promoting the growth of heavy metals
    C) By minimizing harmful chemical input
    D) By increasing soil acidity

38) Explain how industrial activities can negatively affect soil quality.

Provide a practical example to support your answer.

39) Why is the excessive use of pesticides and chemical fertilizers harmful to the soil? How can we reduce this negative impact?

40) Suggest one agricultural practice that can be used to protect the soil from degradation










Exercises: lesson (3) - Chapter (3)



Choose the correct answer :

1) What is the primary cause of acid rain?

a) Evaporation of water from oceans
b) Reaction of sulfur dioxide with water vapor
c) Air pollution by plastic pollutants
d) Accumulation of dust in the atmosphere

2) What is the effect of acid rain on plant soil?

a) Increased soil fertility
b) Improved soil structure and enhanced plant growth
c) improved soil quality and increased nutrients
d) Erosion of essential minerals in the soil and release of toxic metals

3) Which of the following is a direct effect of acid rain on agricultural crops?

a) Increasing agricultural yield
b) Reducing crop quality and productivity
c) Enhancing healthy growth of crops
d) Improving crop stability under changing environmental conditions

4) Which of the following measures is preferred to address the effects of acid rain on soil?

a) Adding large amounts of chemical fertilizers
b) Using lime fertilizers to neutralize acids
c) Increasing the use of pesticides
d) Removing contaminated soil and discarding it

5. Acid rain is primarily formed when sulfur oxides and nitrogen oxides react with:

A) Sunlight
B) Oxygen in the air
C) Water vapor
D) Carbon dioxide

6. What is the typical pH value of acid rain?
   A) 7.0
   B) Above 6.5
   C) Below 5.6
   D) Between 6.0 and 7.5
7. What impact does acid rain have on soil minerals like calcium and magnesium?
   A) It increases their availability
   B) It erodes and depletes them
   C) It binds them more strongly to soil particles
   D) It neutralizes their effects
8. How does acid rain affect soil fertility?
   A) Increases fertility by adding nutrients
   B) Reduces fertility by leaching essential minerals
   C) Promotes rapid plant growth
   D) Has no effect on fertility
9. Which toxic metal is released into the soil as a result of acid rain?
   A) Zinc
   B) Aluminum
   C) Iron
   D) Sodium
10. What environmental phenomenon is associated with acid rain's ability to alter the chemical composition of soil?
   A) Global warming
   B) Soil degradation
   C) Desertification
   D) Ozone layer depletion
11. Which of the following is a direct consequence of acid rain on soil?
   A) Increased soil pH
   B) Erosion of essential nutrients
   C) Reduction in soil moisture
   D) Enhanced crop yields
12. In addition to plants, which other organisms are most affected by acid rain-induced soil changes?
   A) Fish
   B) Microorganisms in the soil
   C) Birds
   D) Reptiles

13. How does acid rain contribute to soil erosion?
    A) It increases organic matter in the soil
    B) It accelerates the breakdown of soil particles and minerals
    C) It enhances the soil's ability to retain water
    D) It improves soil structure
14. Which areas are most vulnerable to the harmful effects of acid rain on soil?
    A) Coastal regions
    B) Forested areas with thin, acidic soils
    C) Deserts
    D) Tropical rainforests
15. What is one of the visible signs of soil degradation due to acid rain?
    A) Lush plant growth
    B) Yellowing leaves and stunted plant growth
    C) Rapid root development
    D) Increased plant resistance to disease
16. Which soil component neutralizes the effects of acid rain?
    A) Aluminum
    B) Sand
    C) Carbonates and minerals
    D) Nitrogen
    D) It has no effect on soil pH
17. What long-term effect can acid rain have on ecosystems that depend on healthy soil?
    A) Increased biodiversity
    B) Ecosystem degradation and loss of species
    C) Enhanced plant and animal growth
    D) Better nutrient recycling
18. Which of the following actions can help mitigate the effects of acid rain on soil?
    A) Increasing the use of fossil fuels
    B) Planting crops that require acidic soil
    C) Reducing emissions of sulfur and nitrogen oxides
    D) Applying more nitrogen fertilizers
19. What is a primary toxic effect of acid rain on plants?
    a) Increasing root growth
    b) Poisoning roots with toxic metals
    c) Enhancing nutrient absorption
    d) Strengthening plant health

20. How does acid rain affect plant growth?
    a) Enhances growth
    b) Reduces growth by lowering nutrient levels in soil
    c) Increases resistance to diseases
    d) Improves soil quality
21. What is one of the impacts of acid rain on crop yield?
    a) Boosting production
    b) Increasing soil fertility
    c) Decreasing crop yield
    d) Enhancing nutritional value
22. How does acid rain directly damage crops?
    a) By reducing their ability to absorb essential nutrients
    b) By providing too much water
    c) By increasing photosynthesis
    d) By improving soil texture
23. What type of fertilizers can neutralize acids in the soil affected by acid rain?
    a) Organic fertilizers
    b) Acidic fertilizers
    c) Alkaline fertilizers
    d) Phosphate-based fertilizers
24. Which of the following gases is primarily responsible for acid rain formation?
    a) Oxygen
    b) Sulfur dioxide
    c) Nitrogen
    d) Methane
25. What environmental action can reduce sulfur and nitrogen oxide emissions?
    a) Increasing car usage
    b) Implementing environmental policies
    c) Decreasing plant production
    d) Removing plants from urban areas
26. How can emissions from fuel combustion be reduced to combat acid rain?
    a) By increasing coal usage
    b) By improving fuel combustion technologies
    c) By reducing solar panel installations
    d) By increasing power plant operations

27. What effect does acid rain have on soil quality?
    a) Increases pH
    b) Decreases soil nutrient levels
    c) Boosts microbial activity
    d) Increases fertility
28. What happens to plants when the soil nutrient levels drop due to acid rain?
    a) They grow faster
    b) They weaken and have reduced growth
    c) They become more resilient
    d) They increase nutrient absorption
29. Which of the following is a preventive measure to reduce acid rain's effects?
    a) Using more acidic fertilizers
    b) Raising awareness about the impact of acid rain
    c) Increasing sulfur emissions
    d) Burning more fossil fuels
30. Which chemical substance in alkaline fertilizers helps neutralize acids in the soil?
    a) Sulfur
    b) Lime
    c) Phosphorus
    d) Nitrogen
31. What is one of the ways to directly regulate pollutants causing acid rain?
    a) Enforcing stronger emissions regulations
    b) Promoting the use of more fossil fuels
    c) Decreasing plant cultivation
    d) Limiting water use
32. Which of the following gases contributes to acid rain along with sulfur dioxide?
    a) Nitrogen oxides
    b) Carbon dioxide
    c) Ozone
    d) Helium
33. Which human activity contributes the most to acid rain?
    a) Growing crops
    b) Burning fossil fuels
    c) Constructing buildings
    d) Deforestation

34. What is the pH range of acid rain?
a) 5.6-6.5
b) 2.0-3.0
c) 4.0-5.0
d) 8.0-9.0

35. How can acid rain harm fish populations?
a) By providing more food for fish
b) By causing water to become more alkaline
c) By increasing the toxic levels of metals in water
d) By enhancing oxygen levels

36. What does acid rain primarily consist of?
a) Hydrogen sulfide and methane
b) Carbon dioxide and oxygen
c) Sulfuric and nitric acids
d) Ozone and carbon monoxide

37. Which industries are major contributors to acid rain?
a) Textile and footwear
b) Paper and furniture
c) Energy production and transportation
d) Agriculture and fishing

38. How can acid rain affect human health?
a) By causing respiratory problems
b) By improving immunity
c) By increasing lung function
d) By enhancing skin health

39. What process forms acid rain?
a) Photosynthesis
b) Combustion of fossil fuels
c) Fermentation
d) Evaporation of water

40. How does acid rain affect building materials?
a) It strengthens materials
b) It causes materials like limestone to erode
c) It cleans surfaces
d) It protects them from weathering

41. Which type of forest is most affected by acid rain?
    a) Tropical rainforests
    b) Temperate forests
    c) Boreal forests
    d) Urban parks
42. Which energy source reduces acid rain pollution?
    a) Coal   b) Natural gas   c) Solar power   d) Diesel
43. What causes the leaching of metals in water due to acid rain?
    a) Increased pH levels
    b) Lower pH levels
    c) Higher temperatures
    d) Decreased rainfall








Exercises: lesson (4) - Chapter (3)



Choose the correct answer :

1) The total amount of water presents in the soil is defined as ....

a- Soil salinity b-Soil compaction

c- Soil humidity d- Soil degradation

2) The higher the salt amount in the soil, the higher it humidity.

a-True b-False

3) Which of the following elements used to strengthen the roots of plants?

a-Magnesium b-Phosphorous c-Potassium d-Nitrogen

4) The main indicator the determines the suitability of soil for cultivation is……..

a-Humidity b- Salinity c-Hydration d- PH

5) As we go deep in the soil, its humidity…………..

a- Increases b-Decreases c-Not affected

6) The easy movement of water between soil particles is called………

a-Porosity b- Diffusion c- Permeation d-Osmosis

7. What happens to plant roots if the soil humidity is too high?
   a) Roots thrive due to increased water content
   b) Roots rot and die due to lack of air for respiration
   c) Roots grow faster
   d) Roots absorb more nutrients
8. Which factor decreases soil humidity?
   a) Increased temperature
   b) Decreased salinity
   c) Decreased particle size
   d) Lower air pressure
9. What is the relationship between soil particle size and soil humidity?
   a) Larger particles retain more water
   b) Smaller particles retain less water
   c) Larger particles reduce soil porosity, retaining less water
   d) Larger particles increase porosity, decreasing water retention

10. What happens to soil humidity as soil depth increases?
    a) It decreases
    b) It remains constant
    c) It increases
    d) It fluctuates randomly
11. What happens to soil porosity when particles are of different sizes?
    a) Porosity decreases
    b) Porosity increases
    c) Porosity remains constant
    d) Porosity is not affected by particle size
12. What is a consequence of having different-sized particles in the soil?
    a) Lower permeability
    b) Increased water retention
    c) Increased air circulation
    d) Decreased water retention
13. Which factor decreases as soil temperature increases?
    a) Soil salinity
    b) Soil humidity
    c) Soil acidity
    d) Soil depth
14. What increases soil permeability?
    a) Decreasing salinity
    b) Larger soil particles
    c) Smaller soil particles
    d) Decreased temperature
15. Why is humidity important in soil for cultivation?
    a) It determines the color of the soil
    b) It affects the plant's ability to absorb nutrients
    c) It has no role in plant growth
    d) It increases soil salinity
16. What is soil porosity?
    a) The size of the soil particles
    b) The percentage of pores and space relative to the soil sample size
    c) The mineral content in the soil
    d) The total water content of the soil

17. What factor increases when the soil depth increases?
    a) Soil temperature
    b) Soil acidity
    c) Soil humidity
    d) Soil salinity
18. What happens if water content in the soil decreases below a certain level?
    a) Plant growth is improved
    b) Plant growth is negatively affected
    c) The soil becomes more fertile
    d) The soil temperature increases
19. Which method is used to measure soil humidity indirectly?
    a) Using a thermometer
    b) Moisture meter
    c) Checking soil color
    d) Measuring plant height
20. What happens to permeability when soil is composed of a mixture of sand, clay, and silt?
    a) Permeability increases
    b) Permeability decreases
    c) Permeability remains unchanged
    d) Permeability fluctuates
21. What is the effect of higher temperature on soil humidity?
    a) Humidity increases
    b) Humidity decreases
    c) Humidity remains constant
    d) Humidity fluctuates randomly
22. What role does soil depth play in water retention?
    a) Greater depth decreases humidity
    b) Greater depth increases humidity
    c) Greater depth decreases porosity
    d) Greater depth decreases permeability
23. Why is it important for soil to have air, in addition to water, for plant roots?
    a) Air helps in absorbing minerals
    b) Roots need air for respiration
    c) Air protects roots from diseases
    d) Air prevents waterlogging

24. What is the purpose of plant cover in soil preservation?
    a) To promote soil erosion
    b) To prevent soil corrosion and preserve humidity
    c) To increase soil salinity
    d) To limit plant growth
25. What role do trees play in soil preservation?
    a) They promote desertification
    b) They act as windbreaks
    c) They increase soil dredging
    d) They hinder plant growth
26. What is crop rotation?
    a) Growing the same crop in the same place continuously
    b) Growing different crops in the same location over time
    c) Planting crops without any specific plan
    d) Ignoring crop types in agriculture
27. What benefit do legume plants provide to the soil?
    a) They deplete soil nitrogen
    b) They host bacteria that fix nitrogen
    c) They increase soil acidity
    d) They reduce soil organic matter
28. What is a primary method for measuring soil quality?
    a) Observing plant growth
    b) Measuring soil humidity and pH
    c) Checking soil color
    d) Examining leaf size
29. How can adjusting soil acidity help in soil preservation?
    a) It improves drainage
    b) It enhances nutrient availability
    c) It increases soil salinity
    d) It promotes erosion
30. What action should be taken if soil measures show low humidity?
    a) Increase drainage and use supplementary irrigation
    b) Stop watering the plants
    c) Add more chemical fertilizers
    d) Ignore the humidity levels

31. What is the effect of organic matter on soil quality?
    a) It decreases fertility and structure
    b) It improves fertility and structure
    c) It has no effect on soil quality
    d) It promotes soil erosion
32. What is one way to enhance soil fertility naturally?
    a) Using chemical pesticides
    b) Practicing monoculture
    c) Adding organic fertilizers
    d) Ignoring soil conditions
33. Which of the following is NOT a benefit of sustainable agricultural practices?
    a) Improved soil quality
    b) Increased crop diversity
    c) Higher dependency on chemical fertilizers
    d) Enhanced environmental health
34. What is a consequence of soil dredging?
    a) Improved soil structure
    b) Decreased soil moisture retention
    c) Enhanced nutrient availability
    d) Increased crop yield
35. How can windbreaks help in soil preservation?
    a) They increase soil erosion
    b) They protect soil from wind damage
    c) They promote crop monoculture
    d) They decrease soil humidity
36. What is one impact of desertification on soil?
    a) Increased fertility
    b) Loss of nutrients and water
    c) Improved structure
    d) Increased organic matter
37. What is a sustainable practice to improve soil health?
    a) Overusing chemical fertilizers
    b) Maintaining a diverse crop rotation
    c) Ignoring crop cycles
    d) Excessive tilling

38. What is the primary goal of sustainable agriculture?
    a) Maximize profits through chemical use
    b) Ensure long-term soil health and productivity
    c) Decrease crop diversity
    d) Increase dependency on non-renewable resources
39. Why is it important to develop plans based on soil measurements?
    a) To ignore soil conditions
    b) To enhance agricultural practices and soil quality
    c) To increase soil erosion
    d) To decrease crop yields
40. What can be added to the soil to improve drainage?
    a) Organic matter
    b) More water
    c) Chemical fertilizers
    d) Stones

41) Explain how to measure the soil humidity and its acidity and Why are these measurements Considered important for maintaining soil quality?

42) How can strategies of plant cover and crops rotation help in preserving the soil? give applied examples.

43) Put a plan to enhance the quality of soil in a field that suffers from decrease of soil fertility. Mention the steps will be taken according to measures you took.

44) Explain the importance of crop rotation in enhancing soil quality?








Exercises: lesson (1) - Chapter (4)




Choose the correct answer :

1. Why is it important to protect natural resources?
   a) They are unlimited
   b) They can be easily replaced
   c) They are essential for future generations
   d) They are primarily for economic gain
2. What human activities threaten biodiversity?
   a) Conservation efforts
   b) Deforestation, pollution, and overfishing
   c) Sustainable agriculture
   d) Urban gardening
3. How does sustainability help fight climate change?
   a) By increasing greenhouse gas emissions
   b) By promoting the use of fossil fuels
   c) By reducing emissions and adapting to climate impacts
   d) By ignoring environmental policies
4. How does sustainability relate to social justice?
   a) It promotes inequality
   b) It ensures fair distribution of resources
   c) It ignores vulnerable communities
   d) It focuses only on economic benefits
5. What is the effect of unsustainable practices on future generations?
   a) They will have access to more resources
   b) They will face depleted resources and environmental issues
   c) They will enjoy a cleaner environment
   d) They will be less affected by climate change
6. What role does sustainable agriculture play in preserving resources?
   a) It depletes soil nutrients
   b) It promotes chemical use
   c) It enhances soil health and conserves water
   d) It increases monoculture practices

7. What can individuals do to contribute to sustainability?
   a) Increase waste production
   b) Practice recycling and reduce consumption
   c) Ignore environmental issues
   d) Use more non-renewable resources
8. Why is it essential to minimize the use of non-renewable resources?
   a) They are abundant and cheap
   b) They can deplete quickly and harm the environment
   c) They have no impact on sustainability
   d) They are easily replaced by technology
9. Which of the following practices promotes biodiversity?
   a) Monoculture farming
   b) Planting a variety of species in agriculture
   c) Deforestation
   d) Overfishing
10. How does sustainability relate to future generations?
    a) It disregards their needs
    b) It ensures they have access to clean resources
    c) It focuses solely on present benefits
    d) It promotes unsustainable practices
11. What is one of the goals of conservation efforts?
    a) To increase resource depletion
    b) To protect endangered species and habitats
    c) To ignore biodiversity loss
    d) To promote industrial development
12. Why is it important to fight climate change?
    a) To promote unsustainable development
    b) To ensure a stable environment for future generations
    c) To increase greenhouse gas emissions
    d) To reduce biodiversity
13. What is a sustainable practice that can improve air quality?
    a) Increasing fossil fuel consumption
    b) Promoting renewable energy sources
    c) Ignoring pollution control measures
    d) Expanding urban sprawl

14. What does the concept of "intergenerational equity" mean in sustainability?
    a) Ignoring future generations
    b) Fair distribution of resources among current and future generations
    c) Prioritizing present needs over future needs
    d) Resource depletion for economic gain
15. How can sustainable practices benefit local communities?
    a) By promoting resource scarcity
    b) By improving health and well-being
    c) By ignoring environmental issues
    d) By increasing pollution
16. What is a common misconception about sustainability?
    a) It only concerns environmental issues
    b) It promotes economic growth
    c) It can benefit social equity
    d) It is essential for future generations
17. Which of the following is NOT a goal of sustainability?
    a) Ensuring long-term resource availability
    b) Protecting ecosystems
    c) Maximizing short-term profits
    d) Conserving biodiversity
18. What type of energy sources are considered sustainable?
    a) Fossil fuels
    b) Renewable energy sources like solar and wind
    c) Nuclear energy
    d) Non-renewable resources
19. What is a significant benefit of preserving forests?
    a) They contribute to biodiversity and carbon sequestration
    b) They reduce air quality
    c) They promote urban development
    d) They increase soil erosion
20. Why is it essential to raise awareness about sustainability?
    a) To promote resource consumption
    b) To encourage sustainable practices and behaviors
    c) To ignore environmental challenges
    d) To maximize short-term gains

21. What does the term "carrying capacity" refer to in sustainability?
    a) The maximum population that an ecosystem can sustain
    b) The amount of pollution an environment can tolerate
    c) The level of resource depletion before collapse
    d) The capacity of cities to grow
22. What is a major consequence of extracting minerals and fossil fuels?
    a) Increased biodiversity
    b) Depletion of natural resources
    c) Improved soil quality
    d) Enhanced water quality
23. How does excessive water use affect freshwater availability?
    a) It increases freshwater sources
    b) It leads to water source depletion
    c) It improves water quality
    d) It enhances aquatic life
24. What is one of the main impacts of water depletion on organisms?
    a) Improved habitats
    b) Threats to food security
    c) Increased biodiversity
    d) Enhanced agricultural production
25. How does the depletion of water resources affect agriculture?
    a) It boosts crop yields
    b) It can lead to decreased agricultural production
    c) It improves irrigation efficiency
    d) It has no effect on agriculture
26. Why is deforestation a concern for climate change?
    a) It reduces carbon emissions
    b) It increases greenhouse gas emissions
    c) It enhances soil fertility
    d) It improves water retention
27. What can excessive pollution of rivers and lakes lead to?
    a) Improved aquatic ecosystems
    b) Depletion of freshwater sources
    c) Increased fishing yields
    d) Enhanced water quality

28. Which of the following is a direct consequence of habitat loss?
    a) Increased plant growth
    b) Extinction of species
    c) Improved ecosystem stability
    d) Enhanced food security
29. How does deforestation affect local climates?
    a) It stabilizes weather patterns
    b) It can lead to changes in precipitation and temperature
    c) It has no impact on local climates
    d) It improves humidity levels
30. What is one of the main causes of water resource depletion?
    a) Efficient irrigation practices
    b) Sustainable water management
    c) Excessive agricultural and industrial use
    d) Increased rainfall
31. What is the primary driver of deforestation in many regions?
    a) Urban expansion
    b) Increased rainfall
    c) Agriculture and timber extraction
    d) Wildlife conservation efforts
32. What is a significant effect of habitat loss due to human activities?
    a) Increased species interdependence
    b) Disruption of food chains
    c) Enhanced ecosystem resilience
    d) Stabilization of populations
33. How does excessive water extraction for agriculture impact the environment?
    a) It improves water availability
    b) It can lead to soil salinization and degradation
    c) It has no impact on the environment
    d) It enhances crop diversity
34. What is one way to combat the negative effects of deforestation?
    a) Encouraging unsustainable logging practices
    b) Implementing reforestation efforts
    c) Increasing agricultural land
    d) Ignoring conservation needs

35. How does human-induced climate change relate to natural resource sustainability?
    a) It has no connection
    b) It improves resource availability
    c) It poses significant challenges to resource management
    d) It stabilizes ecosystems

36) What is the concept of sustainable development?

a) Meeting needs of current generations without considering the needs of future generations
b) Excessive use of resources without regarding the environmental impacts
c) Meeting the needs of current generations without compromising the ability of future generations to meet their needs
d) Achieving rapid economic growth without regard to environmental consequences

37) What is the main objective of developing and utilizing renewable energy sources?

a) Increasing daily energy consumption
b) Reduce dependence on fossil fuels and minimize the effects of climate change
c) Enhance greenhouse gas emissions
d) Improving the quality of fossil fuels

38) Which of the following is considered a sustainable practice in agriculture?

a) Using fertilizers and pesticides in large quantities
b) Growing the same crop in the same soil every season
c) Using organic farming techniques and crop rotation
d) Deforestation to expand agricultural land

39) What is the goal of environmental protection within the concept of sustainable development?

a) Stopping all human activities
b) Preserving and protecting ecosystems to ensure the continuity and balance of life
c) Increase environmental pollution to accelerate economic growth
d) Reducing green spaces and increasing urbanization








Exercises: lesson (2) - Chapter (4)



Choose the correct answer :

1) What is the main effect of lead exposure on human health?

a) Increased physical ability
b) Development of nervous system issues
c) Improved bone health
d) Reduced cancer incidence

2) What is the most common purpose for using activated carbon in water treatment?

a) Neutralizing acids
b) Removing organic matter and chemical contaminants
c) Adding nutrient minerals
d) Sterilizing water using ultraviolet light

3) What is the main source of phosphate that can cause water pollution in agricultural areas?

a) Organic solvents
b) Pesticides
c) Agricultural fertilizers
d) Industrial waste

4. Which of these is an example of a pesticide that can cause water pollution?
   a) Benzene
   b) Dieldrin
   c) Mercury
   d) Formaldehyde
5. What type of pollutant is chloroform classified as?
   a) Heavy metal
   b) Volatile organic compound
   c) Particulate matter
   d) Pesticide

6. Which pollutant can cause neurological disorders in humans?
   a) Nitrogen dioxide
   b) Lead
   c) Carbon dioxide
   d) Ozone
7. The accumulation of which of the following in the soil can make it unfit for agriculture?
   a) Nitrogen
   b) Mercury
   c) Ozone
   d) Water vapor
8. Which of these chemicals is known to increase the risk of cancer?
   a) Lead
   b) Cadmium
   c) Benzene
   d) Oxygen
9. Which type of pollutant is often associated with smog formation?
   a) Heavy metals
   b) Nitrogen oxides
   c) Formaldehyde
   d) Dieldrin
10. How do pesticides typically enter waterways?
   a) Through factory emissions
   b) Leaching from farms
   c) Airborne transmission
   d) Natural erosion
11. Which pollutant is a common cause of soil contamination from industrial waste?
   a) Formaldehyde
   b) Benzene
   c) Lead
   d) Chloroform
12. Which of the following pollutants is most commonly associated with water pollution from industrial sources?
   a) Pesticides
   b) Ozone
   c) Mercury
   d) Nitrogen oxides

13. Exposure to which chemical is known to affect the central nervous system?
    a) Nitrogen
    b) Ozone
    c) Mercury
    d) Carbon monoxide
14. Pesticides can kill aquatic life by contaminating which of the following?
    a) Soil
    b) Air
    c) Water
    d) Forests
15. What type of pollutants are lead and cadmium classified as?
    a) Volatile organic compounds
    b) Particulate matter
    c) Heavy metals
    d) Pesticides
16. Formaldehyde is classified as which type of pollutant?
    a) Heavy metal
    b) Volatile organic compound
    c) Pesticide
    d) Particulate matter
17. Exposure to which of these chemicals can increase the risk of developing cancer?
    a) Lead
    b) Formaldehyde
    c) Ozone
    d) Nitrogen
18. What analytical technique is used to separate and analyze organic compounds like pesticides?
    a) Spectroscopy
    b) Gas Chromatography
    c) Atomic Absorption
    d) Chromatography
19. Which technique is commonly used to measure the concentration of mercury in water samples?
    a) Gas Chromatography
    b) UV Spectroscopy
    c) Atomic Absorption Spectroscopy
    d) Infrared Spectroscopy

20. Which method is used to identify heavy metals such as lead and mercury?
a) Chromatography
b) Spectroscopy
c) Gas Chromatography
d) UV Spectroscopy

21. Which of the following is used to measure oxides of nitrogen and ozone in the air?
a) Atomic Absorption Spectroscopy
b) UV Spectroscopy
c) Gas Chromatography
d) Chromatography

22. What type of spectrometer can be used to measure nitric oxide and ozone concentrations in the air?
a) Mass Spectrometer
b) Atomic Absorption Spectrometer
c) UV Spectrometer
d) Gas Chromatograph

23. Which compound is commonly analyzed using Gas Chromatography in air samples?
a) Mercury
b) Nitric oxide
c) Benzene
d) Lead

24. Which of the following can NOT be effectively analyzed using Gas Chromatography?
a) Formaldehyde
b) Benzene
c) Lead
d) Volatile Organic Compounds

25. For analyzing air pollutants such as nitric oxide and ozone, which technique is preferred?
a) Gas Chromatography
b) UV Spectroscopy
c) Chromatography
d) Atomic Absorption Spectroscopy

26. What property makes activated carbon effective in water filtration?
   a) High oxidation potential
   b) High ability to absorb organic matter
   c) Ability to dissolve contaminants
   d) Ability to reduce water hardness
27. Which of the following contaminants can be removed from water using activated carbon?
   a) Mercury b) Benzene c) Nitrogen dioxide d) Ozone
28. How does activated carbon remove contaminants from water?
   a) By chemically reacting with contaminants
   b) By absorbing contaminants
   c) By oxidizing contaminants
   d) By dissolving contaminants
29. Which chemical can ozone help remove from industrial wastewater?
   a) Lead
   b) Nitric oxide
   c) Toxic organic compounds
   d) Sodium chloride
30. What type of gas is ozone in water treatment?
   a) Reducing gas b) Absorbing gas
   c) Oxidizing gas d) Neutralizing gas
31. What is the primary function of ozone in water treatment processes?
   a) To absorb pollutants
   b) To oxidize and break down pollutants
   c) To filter water
   d) To neutralize pH levels
32. In drinking water treatment plants, what are some contaminants that activated carbon helps remove?
   a) Lead and arsenic
   b) Benzene and chloroform
   c) Nitric oxide and ozone
   d) Sodium and potassium
33. What is one advantage of biological treatment using microorganisms?
   a) It removes heavy metals
   b) It breaks down organic pollutants into harmless substances
   c) It increases the oxygen content of water
   d) It is faster than chemical treatment








Exercises: lesson (3) - Chapter (4)



Choose the correct answer :

1) What is meant by genetic diversity?

a) Differences in colors between plants
b) Genetic differences between individuals within a species
c) The number of species in a given area
d) Differences in species between different environments

2) How does biodiversity contribute to improving soil quality?

a) By increasing precipitation
b) By decomposing organic matter and recycling nutrients
c) Through rapid climate change
d) By absorbing carbon dioxide only

3) What is the effect of deforestation on biodiversity?

a) leads to an increase in the number of species
b) increases the natural fertility of the soil
c) causes habitat loss and threatens species survival
d) leads to decrease carbon dioxide in atmospheric

4) How does biodiversity contribute to climate regulation?

a) By reducing genetic diversity
b) By absorbing carbon dioxide by plants
c) By reducing diversity between species
d) By directly reducing the Earth's temperature

5. What type of chemical pollutant is lead classified as?

a) Pesticide
b) Volatile organic compound
c) Heavy metal
d) Organic pollutant

6. How do volatile organic compounds (VOCs) typically enter the environment?

a) Through evaporation into the air
b) Through water runoff
c) By solid waste accumulation
d) Through soil contamination

7. Which of the following is NOT an example of a heavy metal?
   a) Mercury
   b) Cadmium
   c) Benzene
   d) Lead
8. Why is biodiversity important in maintaining ecosystem stability?
   a) It reduces the number of species in an ecosystem
   b) It creates competition among species
   c) It supports the interdependence of organisms
   d) It decreases the food chain
9. Dieldrin and chlordane are examples of what type of chemical pollutant?
   a) Volatile organic compounds
   b) Heavy metals
   c) Pesticides
   d) Radioactive substances
10. Which pollutants are known to accumulate in the cells of living organisms?
    a) Volatile organic compounds
    b) Pesticides
    c) Heavy metals
    d) Ozone
11. Which volatile organic compound is commonly found in household products and can pollute the air?
    a) Mercury
    b) Formaldehyde
    c) Lead
    d) Cadmium
12. How do heavy metals like mercury and lead affect the environment?
    a) They evaporate into the air
    b) They accumulate in water and air
    c) They persist in the environment and bioaccumulate in organisms
    d) They are quickly degraded by bacteria
13. Which chemical is used to control insect-borne diseases?
    a) Cadmium
    b) Chlordane
    c) Benzene
    d) Formaldehyde

14. What is one effect of volatile organic compounds in the environment?
    a) They contribute to soil erosion
    b) They can evaporate and pollute the air
    c) They accumulate in fish and other aquatic organisms
    d) They reduce biodiversity in ecosystems
15. Which of the following chemicals is NOT a volatile organic compound?
    a) Benzene
    b) Lead
    c) Formaldehyde
    d) Chloroform
16. What is one potential health effect of exposure to volatile organic compounds like benzene?
    a) Increased biodiversity
    b) Cancer
    c) Reduced oxygen levels
    d) Enhanced soil fertility
17. How do pesticides affect ecosystems?
    a) They always support the food chain
    b) They may harm non-target species
    c) They help biodiversity flourish
    d) They are rapidly degraded in the environment
18. What is a major concern regarding heavy metals in the environment?
    a) They evaporate into the air quickly
    b) They break down organic matter
    c) They are highly persistent and bioaccumulate
    d) They boost ecosystem diversity
19. Biodiversity contributes to ecosystem balance by:
    a) Reducing the number of species in an ecosystem
    b) Encouraging species interdependence and resilience
    c) Eliminating invasive species
    d) Increasing toxic substance levels
20. Which of the following best describes how ecosystems benefit from biodiversity?
    a) Reduced nitrogen fixation
    b) Stabilized populations and ecosystems
    c) Increased soil erosion
    d) Greater vulnerability to diseases

21. The bioaccumulation of heavy metals like mercury in fish is an example of:
    a) Pesticide pollution
    b) Ecosystem resilience
    c) Pollution in the food chain
    d) Increased biodiversity
22. How does biodiversity enhance the stability of ecosystems?
    a) By decreasing the number of species
    b) By providing a complex network of interactions between species
    c) By increasing soil erosion
    d) By reducing species interdependence
23. What role does biodiversity play in tropical forests?
    a) Increases deforestation
    b) Contributes to soil stability and prevents erosion
    c) Reduces habitat availability for animals
    d) Causes overpopulation of species
24. Why is biodiversity important in supporting food chains?
    a) It simplifies food webs
    b) It ensures a diversity of food resources
    c) It decreases predator populations
    d) It promotes uniformity in prey species
25. What may happen to tigers in the forest if prey diversity decreases?
    a) Their population may increase
    b) The food chain may be disrupted
    c) They will adapt to eat plants
    d) Their hunting ability will improve
26. How does biodiversity contribute to disease resistance in ecosystems?
    a) Diseases spread more quickly
    b) More species ensure that diseases spread more slowly
    c) Biodiversity has no impact on disease spread
    d) It allows species to become more susceptible to diseases
27. Why is pollination important for ecosystems?
    a) It contributes to soil erosion
    b) It supports the production of fruits and seeds
    c) It eliminates the need for biodiversity
    d) It only benefits pollinators

28. How does biodiversity regulate the climate?
 a) By increasing global temperatures
 b) Through the role of plants in absorbing carbon dioxide and releasing oxygen
 c) By causing carbon dioxide levels to rise
 d) By reducing the number of plants in ecosystems

29. What is the primary goal of establishing nature reserves?
 a) To reduce biodiversity
 b) To protect endangered species and preserve habitats
 c) To promote hunting activities
 d) To develop cities in natural areas

30. Which of the following is an example of a nature reserve that protects wildlife from illegal hunting?
 a) Ras Mohammed Reserve
 b) Tiran and Snafir Islands Reserve
 c) Masai Mara Reserve
 d) All of the above

31. How did the southern white rhinoceros population increase after being threatened with extinction?
 a) Through illegal hunting
 b) Through captive breeding programs
 c) Through deforestation
 d) Through reducing biodiversity

32. What would happen if biodiversity were lost from an ecosystem?
 a) The ecosystem would become more stable
 b) Food chains could collapse
 c) Disease resistance would increase
 d) Species would become more specialized

33. Which of the following best describes the role of biodiversity in climate regulation?
 a) Reduces the amount of oxygen in the atmosphere
 b) Increases carbon dioxide emissions
 c) Helps regulate carbon and oxygen cycles
 d) Decreases the number of plants in ecosystems

34. What role do plants play in maintaining biodiversity and ecosystem health?
    a) They are passive organisms in ecosystems
    b) They provide oxygen and absorb carbon dioxide
    c) They reduce biodiversity by dominating ecosystems
    d) They have no role in climate regulation
35. How does biodiversity help prevent soil erosion?
    a) By decreasing the number of plant species
    b) By stabilizing soil with plant roots and vegetation cover
    c) By promoting water runoff
    d) By increasing deforestation
36. Which process in plants directly contributes to climate regulation?
    a) Pollination
    b) Seed dispersal
    c) Photosynthesis
    d) Decomposition
37. What is one of the key strategies for protecting endangered species?
    a) Deforestation
    b) Establishing captive breeding programs
    c) Hunting endangered species
    d) Eliminating species diversity
38. Which of the following factors is most likely to disrupt an ecosystem's food chain?
    a) Biodiversity loss
    b) Increasing biodiversity
    c) Climate regulation
    d) Establishing nature reserves

39) Explain the importance of biodiversity in supporting life and sustaining ecosystems. Provide illustrative examples.

40) How do environmental changes, such as climate change and pollution, affect different species? Discuss examples.

41) What are the strategies used to protect endangered species? How can they be applied in our daily lives??



كيفية طباعة صفحات معينة من ملف معين



مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

خطوة 2 اختيار اسم الطابعة بتاعتك

خطوة 3 كتابة الصفحات المراد طباعتها نكتب رقم 4 ثم نكتب الشرطة دي - ثم نكتب 9

خطوة 4 اختيار نوع الورق

خطوة 5 اختيار A4

خطوة 6

المراجعة رقم (2)



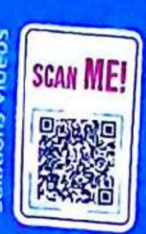




Chapter 1

Final Exam

Aquatic ecosystem



The questions marked with are answered with an explanation



Layers and Components of the Atmosphere

1 **Which processe represents the physical part of the water cycle in nature?**

ⓐ Evaporation
ⓑ Transpiration
ⓒ Formation of groundwater
ⓓ Formation of acid rain

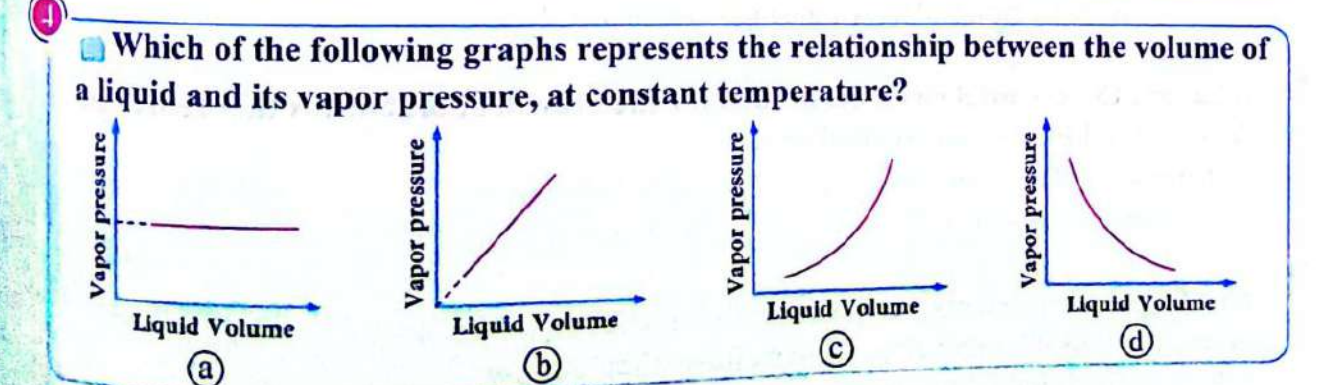
2 **In lakes found in polar regions, fish living in the lake survive because ....**

ⓐ Water freezes only at the bottom, while the surface remains liquid.
ⓑ Water freezes at the midpoint between the surface and the bottom.
ⓒ Water freezes only on the surface, while the water underneath remains liquid.
ⓓ Water freezes both on the surface and at the bottom.

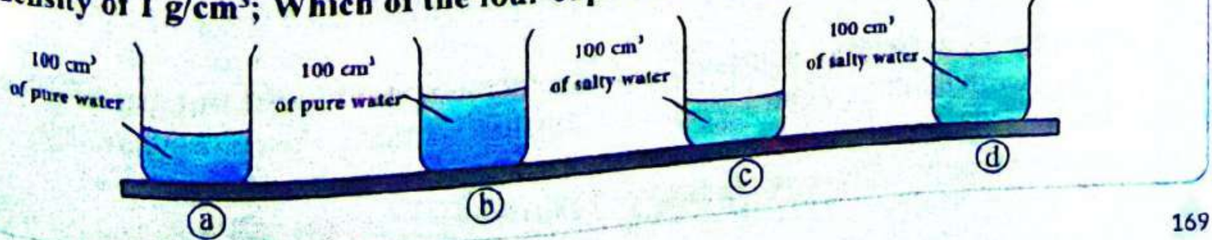
3 **The amount of light penetrating the water surface is greater when the light rays are .... and their wavelength is ....**

ⓐ Perpendicular, short ⓑ Perpendicular, long ⓒ Slanted, long ⓓ Slanted, short

4 **Which of the following graphs represents the relationship between the volume of a liquid and its vapor pressure, at constant temperature?**



5 **A student placed four identical glass cups on a table. Cups A and B contain saltwater with a density of 1.1 g/cm³, while cups C and D contain pure water with a density of 1 g/cm³; Which of the four cups exerts the greatest pressure on the table?**



6 The diagram shows three important structures in the body of freshwater fish; Which structure(s) help these fish get rid of excess water?



ⓐ B only ⓑ A only ⓒ A, C ⓓ C, B

7 **Read both statements carefully, then choose: During the dissolving of table salt in water, sodium and chloride ions are surrounded by water molecules.**

Statement (1): Sodium ions are surrounded by water molecules, and the water is attracted from the oxygen side.

Statement (2): Chloride ions are surrounded by water molecules, and the water is attracted from the oxygen side.

	Statement (1)	Statement (2)
ⓐ	Correct	Correct
ⓑ	Incorrect	Correct
ⓒ	Correct	Incorrect
ⓓ	Incorrect	Incorrect

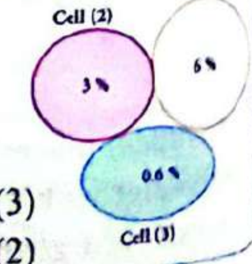
8 **When the temperature of a certain amount of water drops to 4°C, which of the following statements is true?**

ⓐ The mass per unit volume decreases.
ⓑ The mass remains unaffected, and the volume decreases.
ⓒ The mass increases, and the volume decreases.
ⓓ The mass increases, and the volume remains unaffected.

9 **What are the essential elements needed for the growth of organisms that represent the first level in the marine food chain?**

ⓐ Nitrogen and phosphorus ⓑ Sulfur and arsenic
ⓒ Carbon and oxygen ⓓ Phosphorus and lead

10 **The diagram represents 3 adjacent cells containing different concentrations of sugar. Study it carefully, then answer; Which of the following represents the pathway of water movement by osmosis between these cells over time?**

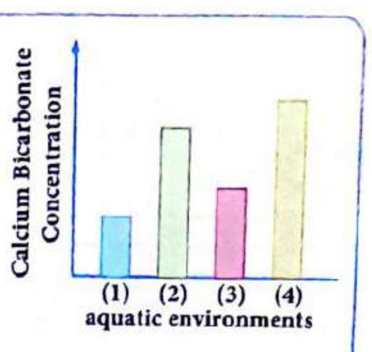



ⓐ From cell (1) to cell (2) ⓑ From cell (1) to cells (2) and (3)
ⓒ From cell (2) to cells (1) and (3) ⓓ From cell (3) to cells (1) and (2)

11 **The decrease in freezing point is .... proportional to the number of solute particles, and the boiling point is .... proportional to the concentration of the solution.**

ⓐ Directly / Directly ⓑ Directly / Inversely ⓒ Inversely / Inversely ⓓ Inversely / Directly

12 The graph shows the percentage of calcium bicarbonate in various aquatic environments. Deduce:



(1) In which of the environments shown does the presence of mollusks increase?

ⓐ (1) ⓑ (2) ⓒ (3) ⓓ (4)

(2) In which of the environments shown is the percentage of CO_2 lower?

ⓐ (1) ⓑ (2) ⓒ (3) ⓓ (4)

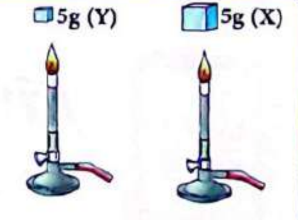
13 How much amount of heat is required to raise the temperature of 0.5 kg of lead from 30°C to 60°C? (Considering the specific heat capacity of lead = 129 J/kg·K)

ⓐ 1935 J ⓑ 2346 J ⓒ 1900 J ⓓ 1246 J

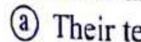
14 Which of the following represents the method of osmoregulation in amoebas and saltwater fish, respectively?

ⓐ Vacuole – Contractile vacuole
ⓑ Plasma membrane – Skin
ⓒ Gills – Mouth
ⓓ Contractile vacuole – Kidneys

15 The diagram represents two equal masses of different metals that have absorbed the same amount of heat and had the same initial temperature. Based on this, which of the following statements is true?



ⓐ Their temperature increase will be the same.
ⓑ The denser metal will have a greater temperature increase.
ⓒ The metal with lower specific heat will have a greater temperature increase.
ⓓ The metal with a lower melting point will have a greater temperature increase.



Second Essay

16 Justify: The pH of clouds is generally slightly acidic.

17 What is your prediction for the boiling point of pure water in the following situations:

(1) On top of the Himalayan mountains (2) Inside a pressure cooker

18 The image shows the migration of a fish species. Study it, then answer:



(1) What type of aquatic environment do fish reproduce in?
(2) What type of aquatic environment does the sexual maturation of these fish occur in?
(3) What type of adaptation is shown in this form?

2 Chapter

Comprehensive Exam on the Chapter

Solutions Videos



The questions marked with are answered with an explanation

First Multiple Choice

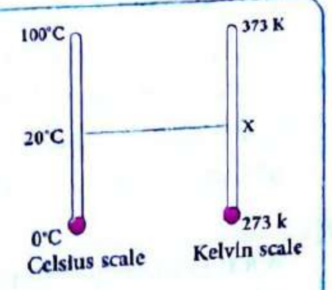
1. **Which of the following disasters has its limits increased due to global warming?**
   ⓐ Earthquakes ⓑ Volcanoes ⓒ Tsunamis ⓓ Destructive Hurricanes

2. **What is the main reason for the increase in temperature in the upper part of the stratosphere?**
   ⓐ Increased concentration of carbon dioxide
   ⓑ Interaction of infrared rays with ozone
   ⓒ Absorption of ultraviolet rays by ozone gas
   ⓓ Vertical wind activity in the upper layer

3. **What is the expected result of the reduced arrival of solar radiation to the ionosphere components?**
   ⓐ Increased likelihood of meteor burning in the atmosphere
   ⓑ Reduced ability of wireless communications to travel long distances
   ⓒ Increased temperatures in the mesosphere
   ⓓ Decreased ability of the atmosphere to reflect ultraviolet rays

4. **The Arctic has lost about 30% of its ice cover from 1980 to 2023. Explain the reason for this occurrence.**
   ⓐ Trapping of long-wavelength radiation
   ⓑ Trapping of short-wavelength radiation
   ⓒ Ozone layer depletion
   ⓓ Using solar-powered machines

5. **The following figure represents the Celsius and Kelvin scales, showing the freezing and boiling points of water. Based on the data, the temperature (X) on the Kelvin scale that corresponds to 20 degrees Celsius is:**



   ⓐ 200 K
   ⓑ 253 K
   ⓒ 293 K
   ⓓ 323 K



6. If the relative humidity in a tropical area is 90%, what is the most likely effect on the rate of transpiration in plants?

ⓐ The transpiration rate increases
ⓑ The transpiration rate decreases
ⓒ The transpiration rate remains constant
ⓓ The transpiration rate increases then decreases

7. What is the relation between the angle of sunlight and the amount of thermal energy received in a certain area?

ⓐ The angle of sunlight does not affect the distribution of heat.
ⓑ Vertical rays distribute heat equally over the entire area.
ⓒ Slanted rays heat the atmosphere more than the Earth's surface.
ⓓ The more the angle of incidence of the ray's perpendicular to the surface of the Earth, the greater the amount of thermal energy received.

8. Study the image and deduce: What type of heat transfer explains the warmth of the opposite hand?



ⓐ Radiation. ⓑ Conduction.
ⓒ Convection. ⓓ Thermal diffusion.

9. What is the main reason for the presence of harmful ozone in the troposphere instead of the stratosphere?

ⓐ Due to the reaction of oxygen with sulfur dioxide.
ⓑ Due to the reaction of ozone with nitrogen oxides and hydrocarbons in presence of sunlight.
ⓒ Due to the reaction of carbon dioxide with water vapor.
ⓓ Due to the leakage of ozone from the stratosphere.

10. If you were planning to develop a global strategy to combat climate change, which of the following actions would be the most effective to ensure a sustainable future?

ⓐ Expanding the use of fossil fuels to increase production.
ⓑ Improving the efficiency of renewable energy use and reducing carbon emissions.
ⓒ Reducing reliance on renewable energies in favor of heavy industries.
ⓓ Increasing the use of plastics to reduce production costs.

11. What is the cause of the rising sea levels globally?

ⓐ Increased oxygen levels. ⓑ Decreased CO_2 levels.
ⓒ Increased CO_2 levels. ⓓ Decreased methane levels.

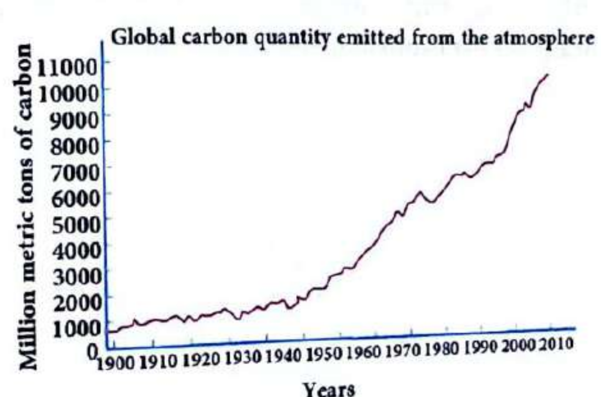
12 **What explains the change in glucose levels in the cells of the wood frog during winter?**

ⓐ Prevents food storage.
ⓑ Excessive consumption and digestion of sugars.
ⓒ Increased activity of organisms.
ⓓ Prevents the freezing of cells.

13 **What is the result of the presence of ozone at an altitude of 25 km above the Earth's surface?**

ⓐ Reduces the penetration of ultraviolet rays.
ⓑ Increases the penetration of ultraviolet rays.
ⓒ Reduces the penetration of sunlight.
ⓓ Increases the penetration of sunlight.

14 **Study the provided graph, then answer:**



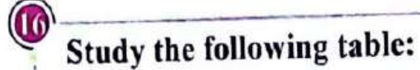
Which of the following methods is capable of reducing carbon levels?

ⓐ Using coal instead of petroleum for energy production.
ⓑ Using agricultural waste in paper production as a substitute for trees.
ⓒ Building factories far from densely populated cities.
ⓓ Relying on private cars instead of public transportation.

15 **Which of the following options represents the changes in both temperature and pressure as you ascend in the troposphere?**

	Temperature	Pressure
ⓐ	Increases	Increases
ⓑ	Increases	Decreases
ⓒ	Decreases	Decreases
ⓓ	Decreases	Increases





16 **Study the following table:**

Gas	(W)	(X)	(Y)	(Z)
Vrms (Km/sec)	7.5	9.0	11.2	13

(1) Which of these gases can be found within the Earth's atmosphere?

(2) Which of these gases could belong to cosmic space?

17 **What do you explain: When a murcury barometer is moved from a (mountain slope) area to the (mountain peak), the height of the mercury column in the barometer tube decreases?**

18 **How can the efficiency of heating water in this system be improved? Suggest two modifications to the pot or the flame.**



3 Chapter

Comprehensive test on the chapter

Solutions Videos



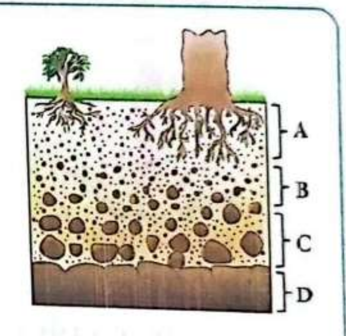
The questions marked with are answered with an explanation

First Multiple Choice Questions

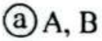
1 **Which soil type (sandy, silty, clay) has the highest permeability rate and the lowest moisture content, respectively?**

ⓐ Sandy – Clay
ⓑ Sandy – Sandy
ⓒ Loamy – Sandy
ⓓ Clay – Loamy

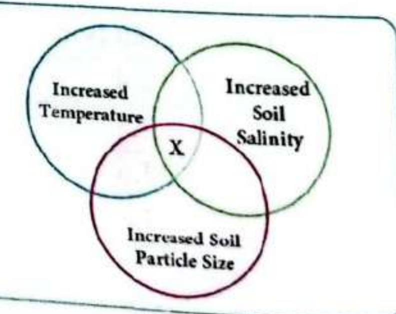
2 **Study the soil profile shown and answer:**
Which of the zones in the profile contains the highest amount of organic material, and which is not penetrated by plant roots, respectively?



ⓐ A, B
ⓑ A, C
ⓒ B, D
ⓓ D, A

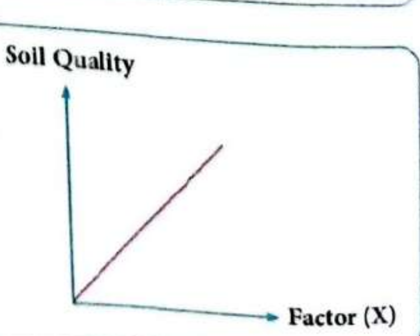


3 **Study the diagram and answer:**
What does symbol (X) refer to?

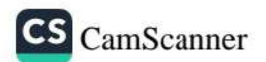


ⓐ Factors that inversely affect soil moisture
ⓑ Factors that directly affect soil moisture
ⓒ Physical factors affecting soil moisture
ⓓ Chemical factors affecting soil moisture

4 **Study the graph and answer:**
Which of the following does not represent factor (X)?



ⓐ Vegetation cover
ⓑ Crop rotation
ⓒ Adding compost
ⓓ Nitrogen fertilizer amounts



5. Brazilian photographer Sebastião Salgado and his wife decided to replant a forest and bring it back to life, as shown in the image of changes in the area from 2000 to 2012. Which of the following events does not accompany these changes?





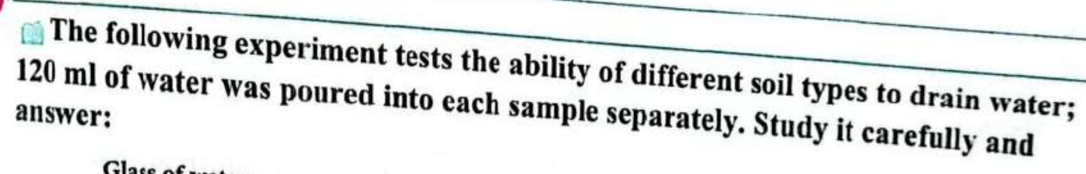
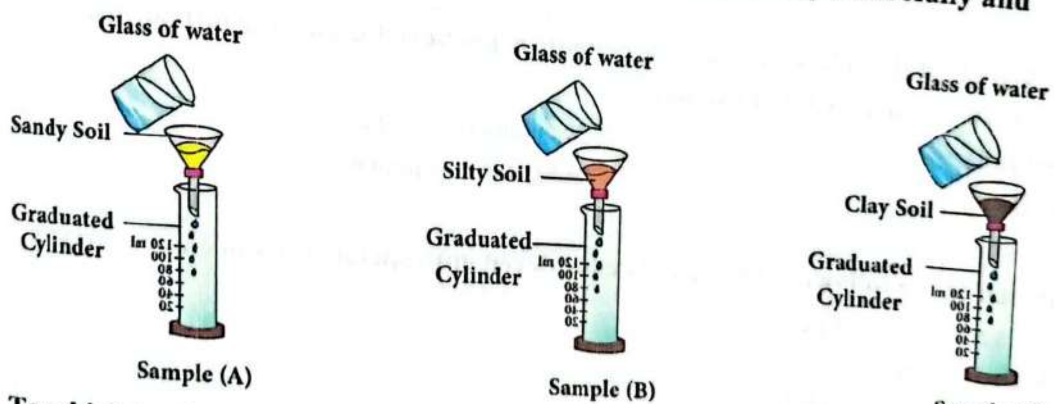


ⓐ Reducing the rate of acid rain
ⓑ Decreasing greenhouse gas levels in the area
ⓒ The return of many birds to the area
ⓓ Decrease in soil particle cohesion

6. How do acid rains affect plants?

ⓐ Improve nutrient absorption
ⓑ Reduce their ability to absorb nutrients
ⓒ Increase root growth
ⓓ Enhance plant resistance to diseases

7. The following experiment tests the ability of different soil types to drain water; 120 ml of water was poured into each sample separately. Study it carefully and answer:

To which level will the water reach in the graduated cylinder for each sample after 20 seconds of the experiment?

	Sample (A)	Sample (B)	Sample (C)
ⓐ	80 ml	60 ml	120 ml
ⓑ	100 ml	120 ml	20 ml
ⓒ	20 ml	60 ml	100 ml
ⓓ	100 ml	60 ml	20 ml



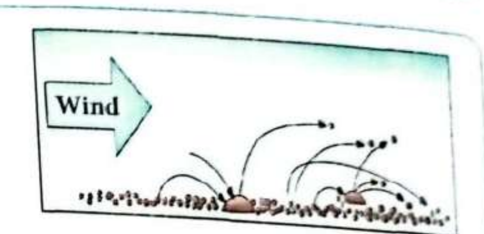
8 What are the results of excessive industrial waste disposal?

ⓐ Increased risk of cancer
ⓑ Impaired plant phosphorus absorption
ⓒ Increased salt concentration in soil solution
ⓓ Plant toxicity due to high lead levels

9 Which of the following causes increases soil cohesion and decreases its ability to retain water?

ⓐ Acid rain
ⓑ Salinization
ⓒ Heavy metals
ⓓ Soil compaction

10 The figure illustrates a type of weathering that is ....



ⓐ Chemical
ⓑ Physical
ⓒ Biological
ⓓ Thermal

11  Which of the following soil components is produced under the influence of earthworm burrowing in the soil?

ⓐ Primary minerals
ⓑ Secondary minerals
ⓒ Gases
ⓓ Organic components

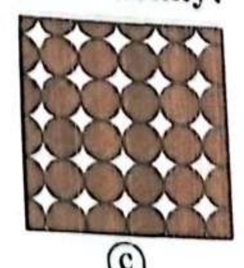
12  Which of the following practices is considered appropriate for soil conservation?

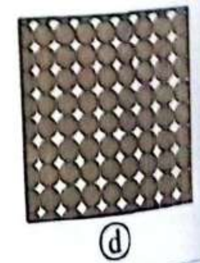
ⓐ Excessive use of pesticides
ⓑ Crop rotation
ⓒ Burning crops after harvest
ⓓ Relying on one type of crop

13 Which shape represents soil with the highest permeability?

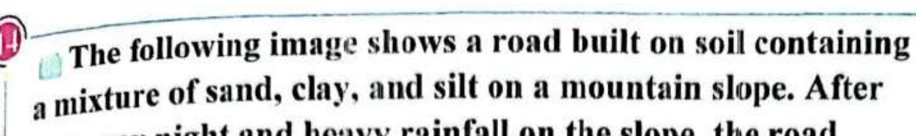

ⓐ


ⓑ


ⓒ

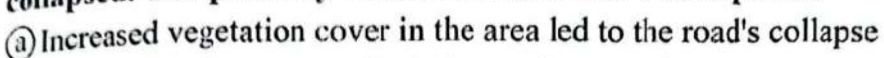

ⓓ





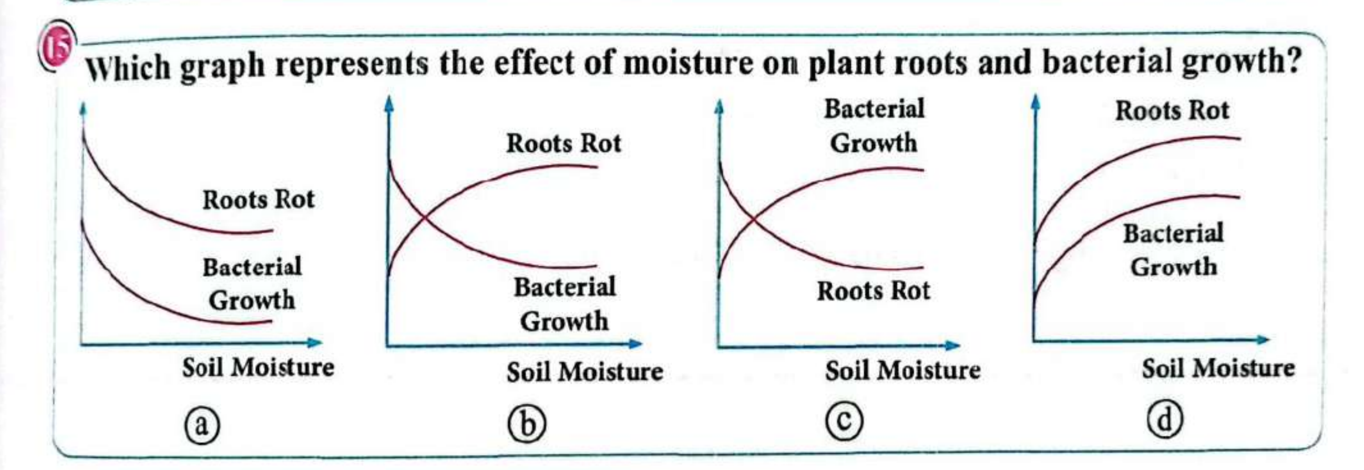
14 **The following image shows a road built on soil containing a mixture of sand, clay, and silt on a mountain slope. After a stormy night and heavy rainfall on the slope, the road collapsed. The primary reason for the road's collapse is:**





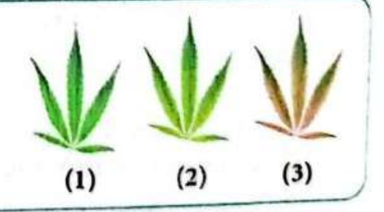
ⓐ Increased vegetation cover in the area led to the road's collapse
ⓑ High soil drainage capacity led to rapid water drainage
ⓒ Chemical interaction of soil with acidic groundwater
ⓓ The soil beneath the road became saturated with water, leading to its collapse

15 **Which graph represents the effect of moisture on plant roots and bacterial growth?**



Second Essay Questions

16 **The opposite figure shows changes in the leaves of a plant due to the deficiency of a certain element inthe soil. Study the figure and answer:What is the elementcausing this change in the leaves, and provide an explanation?**



17 **Sustainable development occurs when human use resources without depleting them What role does sustainable development play in solving the problem of soil nutrient deficiency?**

18 **The table shows the pH value of the soil solution in three different locations. Study it carefully and answer: In which of the previous locations does the release of aluminum minerals occur in the soil?**

soil	pH value of the soil solution
(A)	7
(B)	8
(C)	4.5

4 Chapter

Comprehensive Exam
The role of science in environmental sustainability



Solutions Videos

The questions marked with are answered with an explanation

First Multiple Choice Questions

1 **Biodiversity plays an important role in regulating the climate through ....**

ⓐ Disease resistance
ⓑ Providing a complex network of interactions between species
ⓒ Introducing types of exotic organisms into ecosystems
ⓓ The role of plants in absorbing carbon dioxide and releasing oxygen

2 **The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an example of ....**

ⓐ Captive breeding programs
ⓑ Awareness and education
ⓒ Rehabilitation of natural habitats
ⓓ Laws and regulations

3 **What highly toxic substance was banned in 1972 and was responsible for threatening the bald eagle with extinction?**

ⓐ Cadmium
ⓑ Lead
ⓒ DDT pesticide
ⓓ Formaldehyde



4 **What biological process does the bee in the image opposite contribute to for the plant?**



ⓐ Transporting food
ⓑ Reproduction
ⓒ Photosynthesis
ⓓ Respiration



5 **What is the consequence of an organism relying on only one other organism as a food source?**

ⓐ The organism becomes endangered
ⓑ The entire ecosystem becomes imbalanced
ⓒ The organism's chances of survival increase when a change occurs
ⓓ The organism's chances of survival decrease when a change occurs

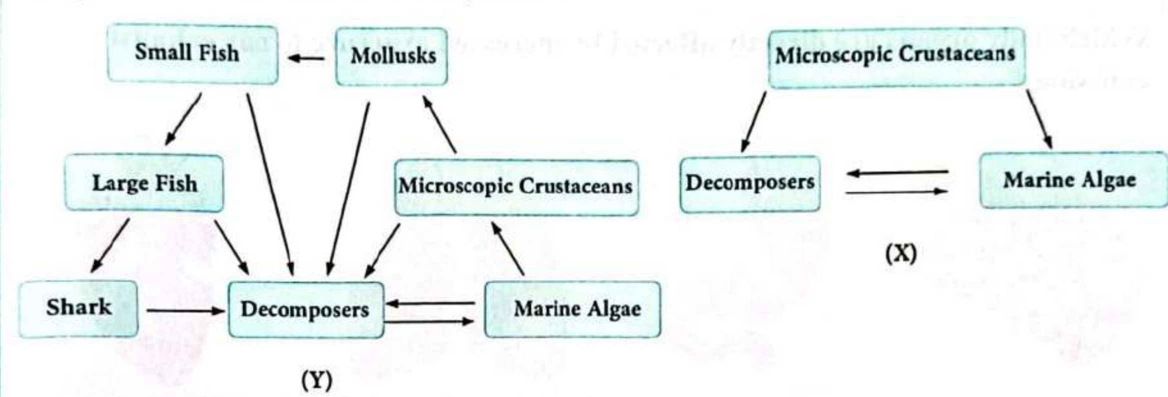


Which of the following actions would improve the survival of organisms?

ⓐ Building factories that rely on fossil fuels
ⓑ Forest planting
ⓒ Canning and packaging meat
ⓓ Cutting down trees to make paper



The shapes (X) and (Y) represent energy pathways between different types of organisms in two different ecosystems.



Which of the two systems is more stable?

ⓐ System X, due to genetic diversity among its species
ⓑ System Y, due to increased exposure of its species to diseases
ⓒ System X, due to the presence of a complex network of interactions between its species
ⓓ System Y, due to biodiversity and high complexity



What is the most effective strategy to protect endangered species after large areas of forests in Australia were burned?

ⓐ Captive breeding programs
ⓑ Establishing nature reserves
ⓒ Enacting laws and regulations
ⓓ Rehabilitation of natural habitats



What is the consequence of deforestation?

ⓐ Soil erosion and reduced fertility
ⓑ Increased oxygen levels in the atmosphere
ⓒ Decrease in Earth's temperature
ⓓ Decrease in sea level



What is the result of having a large number of organisms in an ecosystem?

ⓐ Loss of biodiversity
ⓑ Extinction
ⓒ Desertification
ⓓ Reduced spread of diseases



What is the result of tropical deforestation?

ⓐ Increased species count
ⓑ Increased natural soil fertility
ⓒ Loss of habitats and endangerment of species
ⓓ Decreased carbon dioxide levels in the air

Which body organs are directly affected by increased exposure to car exhaust emissions?


ⓐ


ⓑ


ⓒ


ⓓ

Among the most important causes of global warming, in addition to emissions from cars and factories ....

ⓐ Removal of the topsoil layer
ⓑ Overhunting of wildlife
ⓒ Excessive logging of forest trees
ⓓ Intensive use of soil



The image opposite shows a large collection of African elephant tusks used in the ivory industry:
What is the cause of the depletion that can be inferred from the figure?



ⓐ Establishing nature reserves
ⓑ Overhunting
ⓒ Climate change
ⓓ Habitat destruction



The presence of smog suggests that the area is ....

ⓐ Polar
ⓑ Coastal
ⓒ Temperate
ⓓ Tropical

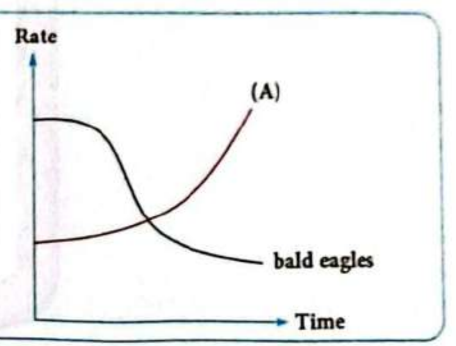




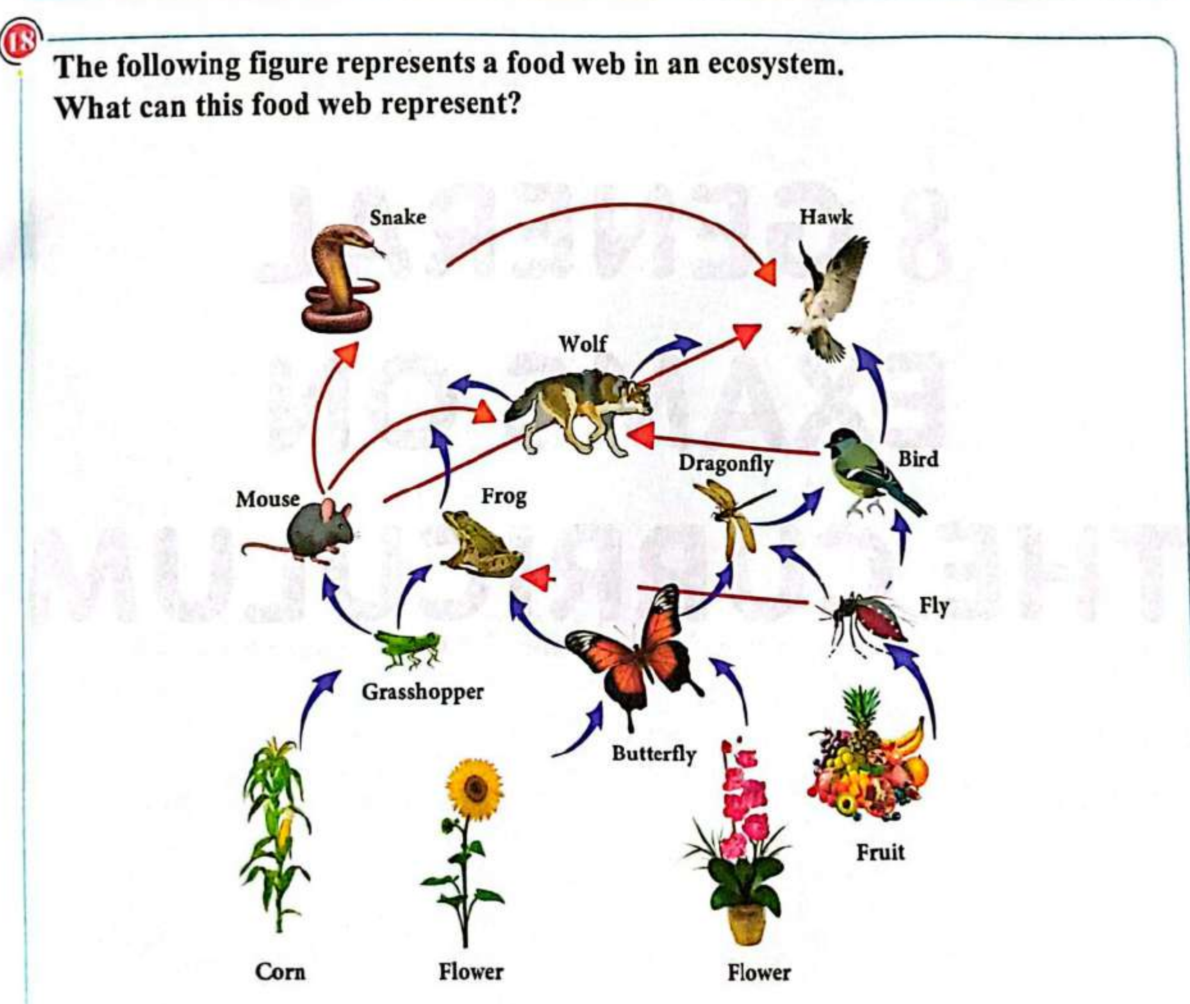
16 **Explain:**

How do international laws play a role in protecting the climate and biodiversity?

17 **The graph below shows the relationship between the reproductive rate of the bald eagle and the rate of pesticide spraying (A).**
What is the result of stopping the spraying of pesticide (A)?



18 **The following figure represents a food web in an ecosystem.**
What can this food web represent?







كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9

خطوة 1

File → Print... Ctrl+P

خطوة 2
اختيار اسم الطابعة بتاعتك

خطوة 3
كتابة الصفحات المراد طباعتها
نكتب رقم 4 ثم نكتب الشرطة دي – ثم نكتب 9

Pages: 4 - 9

خطوة 4
اختيار نوع الورق

Page Setup...

خطوة 5
اختيار A4

Size: A4

خطوة 6

Print